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(54) Digital copying apparatus with a personal data storage system

(57) A digital image reproduction apparatus comprising

a scanner unit,
a printer unit,
a memory,
an operator control unit integrated in the apparatus and provided with a keyboard and a display for giving operator control commands to the apparatus by a user,
a network connection unit for coupling to a network for the purpose of communication with a digital external environment comprising at least a number of workstations of users,
a management unit connected to the said scanner unit, printer unit, memory and network connection unit, and, via the network connection unit, to the said workstations, which management unit maintains logic storage spaces in the memory, each allocated to a specific user,
wherein the management unit, when receiving from a said user's workstation a digital data file for printing, stores said file in the said logic storage space of the relevant user and passes it for printing to the said printer unit only on a command from the operator control unit, which command identifies the relevant file,
and also, on receipt from the operator control unit of an order for scanning, such job being provided with a user identification, stores the digital data generated by the scanner unit in executing the said order in the logic storage space of the relevant user and passes it to a workstation of the relevant user only on a command from the latter workstation, which command identifies the relevant file.

Other files, such as sets of adjustment parameters for a printing or scanning process, can also be stored in the logic storage spaces.

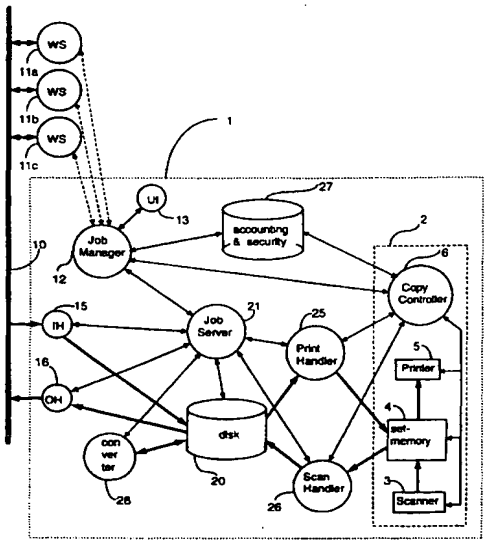


FIG. 2

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BEST AVAILABLE COPY

Description

[0001] The invention relates to a digital image reproduction apparatus comprising a scanner unit, a printer unit, a memory, an operator control unit integrated in the apparatus and provided with a keyboard and a display for giving operator control commands to the apparatus by a user, a network connection unit for coupling to a network for the purpose of communication with a digital external environment comprising at least a number of workstations of users, and a management unit connected to the said scanner unit, printer unit, memory and network connection unit, and, via the network connection unit, to the said workstations.

[0002] Reproduction apparatus of this kind is generally known. Such apparatus can be used for copying documents and for printing digital image data files made in a workstation.

[0003] Scanner devices are also known which are coupled to a network and which can send the digital data files generated during scanning to a pre-programmed address on the network, usually a workstation of a user.

[0004] A network is provided with one or more fileservers which provide interim storage and retention of the digital data if a destination address does not answer because the apparatus connected thereto is not ready for reception or possibly not even switched on. A data file is thus first sent from the dispatch address via the network to the fileserver and then from the latter to the destination address.

[0005] A number of problems can arise in this connection, particularly if the files sent are large. First of all, a file is sent over the network twice so that the load on the network and the file server is relatively large. Secondly, if an apparatus coupled to a reception address is not ready for reception, the files are stored on the file server disk, which can thus fill up, so that the functioning of the entire network is obstructed or even made impossible. Thirdly, in a scanning process, when the disk of the receiving workstation becomes full, the scanning process has to be terminated, and this obstructs the progress of the work.

[0006] In addition, data traffic monitoring by the owner of the data files may be inadequate, on the one hand because print files are printed immediately even if he is not present, and secondly scan files are immediately available at his workstation even if he is not present.

[0007] It is therefore desirable effectively to monitor the traffic of digital image data from and to the reproduction apparatus so that the above problems are eliminated or at least so reduced that they do not obstruct the functioning of the entire digital network.

[0008] To this end, in the apparatus according to the preamble, the management unit maintains logic storage space in the memory, each allocated to a specific user, wherein the management unit, when receiving from a said user's workstation a digital data file for printing, stores said file in the logic storage space of the relevant user and passes it for printing to the said printer unit only on a command from the operator control unit, which command identifies the relevant file, and also, on receipt from the operator control unit of an order for scanning, such order being provided with a user identification, stores the digital data generated by the scanner unit in executing the said job in the logic storage space of the relevant user and passes it to a workstation of the relevant user only on a command from the latter workstation, which command identifies the relevant file.

[0009] In this way, data traffic between the digital environment and the apparatus is decoupled in time. This means that a permanent coupling between the making and sending of a file for processing, and the processing of that file, is eliminated, and the files are kept in a safe place in the apparatus, this place being coupled to the user's person, until they are actively called up from the destination address. This means that the one user when making or sending files need not be concerned regarding the time and circumstances of processing.

[0010] In addition, the owner of a file retains control thereof, because its transport takes place only in his presence at the reception point. The buffer point can also be secured so that only the owner of the buffer can access the files stored therein.

[0011] The term "user" in this context also includes an application program or (the control program of) a peripheral, if such a program is aimed at generating or processing a data file.

[0012] It should also be noted that the term "workstation of a user" means a workstation running a program personalised for that user.

[0013] It should be noted that Applicants' patent application EP-A 0 689 157 already describes a printing apparatus which never directly prints a print file received from a digital environment, but stores it internally under the owner's name and does not print it until a command for this purpose is given from the apparatus operator control panel, said command identifying the file. The idea of storing a print file and only releasing it on a specified command is now expanded in the present invention to a concept of logic storage spaces accessible only to the relevant user, in which not only print files, but also all kinds of other files, primarily scan files, can be stored, but always in such manner that a stored file has to be actively brought up from its destination from a logic storage space of this kind.

[0014] Particularly for scan jobs this concept of logic storage spaces in the apparatus has the advantage that a file is sent over the network just once and hence subjects the network and the file server to less loading. In addition, scan files remain in the apparatus until a user brings them up to his workstation. If so many digital data are generated that the disk becomes full, that disk is the apparatus disk (the memory). As a result this disk may break down, but that does not obstruct the action of the file server and the network, so that in any case the communication between the users of the network is not ob-

structed. Finally, the problem of the limited storage capacity of the workstation is effectively solved, because the user will only bring up as many files as his workstation can process, and he can leave the rest waiting in the apparatus memory.

[0015] Other files which can be kept in the logic storage spaces are sets of settings of parameters for controlling the apparatus which have been made by the operator on the operator control panel prior to a printing or scanning process. These can be made by means of the operator control panel or by means of a special program running on a workstation, stored in the personal logic storage space of the user, and be brought up therefrom to control the apparatus.

[0016] The logic storage spaces may have the form of a directory structure in the memory, but also, for example, the form of entries in a database. Of course the management unit which manages the logic storage spaces is provided with an administration system for the logic storage spaces and their contents.

[0017] According to one embodiment of the apparatus according to the invention, the management unit, on receiving from a workstation a digital data file for printing, such file being provided with a user identification, checks whether it already manages a logic storage space for the relevant user, and if that is not the case, the management unit creates a logic storage space for the relevant user and stores therein the received digital data file. The creation of logic storage spaces can also take place in response to there being started up at a workstation a program intended for communication with the apparatus and reporting to the management unit on start-up.

[0018] The invention will now be explained with reference to the following description and the drawings, wherein:

[0019] Fig. 1 illustrates the apparatus according to the invention.

[0020] Fig. 2 is a diagram showing the constituent parts of the apparatus according to the invention.

[0021] Figs. 3 and 4 illustrate the apparatus operator control panel in various situations.

[0022] Figs. 5A and 5B are flow diagrams to explain the operation of the apparatus accounting and security unit.

[0023] Fig. 6 is a flow diagram of a process for making a copy.

[0024] Fig. 7 is a flow diagram of a reception process for print files.

[0025] Fig. 8 is a flow diagram of the initial procedure of an interactive printing process.

[0026] Fig. 9 is a flow diagram of a printing process.

[0027] Fig. 10 is a flow diagram of a scan process.

[0028] Fig. 11 illustrates the operator control panel.

[0029] Fig. 12 is a flow diagram of a scan process using a scan profile.

[0030] Figs. 13 and 14 are flow diagrams of a procedure for making a scan profile.

[0031] Fig. 15 is a flow diagram of a procedure for fetching a scan profile from the apparatus.

[0032] Fig. 1 shows the apparatus according to the invention, on which the different parts are shown diagrammatically separately.

[0033] The document feeder 110 is provided with an input tray 111 for the introduction of a stack of documents, a transport mechanism (not shown) for transporting the documents one by one along the scanner unit 120, and a delivery tray 112, in which the documents are placed after scanning.

[0034] The scanner unit 120 comprises a flat bed scanner provided with a glass platen on which an original document can be placed, a CCD array and an imaging unit consisting of a movable mirror and lens system for imaging the document on the CCD array. In these conditions the CCD array generates electrical signals which are converted into digital image data in manner known per se.

[0035] The printer unit 130 comprises an electro-photographic processing section known per se, in which a photoconductive medium is charged, exposed by means of an LED array in accordance with digital image data, and is developed with toner powder, whereafter the toner image is transferred and fixed on an image support, usually a sheet of paper.

[0036] A stock of image supports in different formats and orientations is available in the supply section 140.

[0037] The image supports with the toner image are transported to the finishing and delivery section 150, which if necessary collects them into sets and staples them and then deposits them in the delivery tray 151.

[0038] An operator control panel 160 is provided on the apparatus for operation thereof. It is provided with a display and keys and is connected to an operator control unit (not shown here).

[0039] The control electronics are shown diagrammatically by reference 170. A cable 171 connects this section of the apparatus to a local network 10 (not shown here).

[0040] Fig. 2 is a diagram showing the constituent parts of the apparatus according to the invention.

[0041] The apparatus 1 comprises a basic unit 2 which contains a scanner unit 3, a printer unit 4, a set memory 5 and a control unit 6 for these units, hereinafter termed the CopyController.

[0042] The basic unit 2 contains the units and functions required for making a simple copy. The scanner 3 during the scanning of an original document generates digital image data and stores them in the set memory 4, whereafter the printer 5 reads out the said image data from the set memory 4 and prints them on an image support, usually a sheet of paper. This process is controlled by the CopyController 6. The set memory 4 in this description also comprises an image processing function, although this is not essential to the present invention and is therefore not explained further.

[0043] The apparatus 1 also comprises a number of

units required to print digital image data which are fed via a local network 10 from a digital environment, and for exporting digital image data generated by the scanner 3 to the digital environment via the same local network 10.

[0044] The term "digital environment" as used here denotes one or more workstations 11a, 11b, 11c, on which a program is operative for communication with the apparatus according to the invention, and which are also connected to the local network 10.

[0045] The apparatus 1 is provided with:

- a management unit 12, hereinafter referred to as the: JobManager, which manages the processing processes and also updates an administration system for all the copying, scanning and print jobs present,
- an operator control unit 13, also termed a: UserInterface (UI), provided with an operator control panel on the apparatus housing, with a display and keys for operation of the apparatus 1,
- an InputHandler 15 for receiving and transmitting digital data reaching the apparatus via the network 10 from the digital environment and an OutputHandler 16 for sending digital data via the network 10 to the digital environment,
- a storage unit 20 formed by a high-capacity hard disk, a unit 21 hereinafter referred to as a JobServer for managing the data files on the storage unit 20 and for controlling the processing processes,
- a control unit 25 hereinafter referred to as a PrintHandler, which is dedicated to providing a printing process, and a control unit 26 hereinafter referred to as a ScanHandler, which is dedicated to providing a scanning process,
- an accounting and security unit 27, which inter alia manages the authorisation of users and access codes,
- a conversion unit 28 for converting digital data files to different formats.

[0046] Fig. 2 shows control connections by means of thin arrows and data transport connections by means of thick arrows.

[0047] The JobManager 12 is connected to the operator control unit 13, the JobServer 21, the CopyController 6, the accounting and security unit 27 and, via the network 10 and the InputHandler 15 and OutputHandler 16, to the workstations 11a - c. The latter connection is indicated diagrammatically by direct broken-line arrows. Apart from being connected to the JobManager 12, the JobServer 21 is also connected to the storage unit 20, the InputHandler 15, the OutputHandler 16, the PrintHandler 25, the ScanHandler 26 and the conversion unit 28. The CopyController 6 is connected to the scanner unit 3, the set memory 4 and the printer unit 5, and also to the JobManager 12, the PrintHandler 25, the ScanHandler 26 and the accounting and security unit 27.

[0048] Digital data files which are sent to the apparatus 1 via the network for printing are either of a first type or a second type. Files of the first type are required to be printed directly, i.e. without further action on the part of an operator at the apparatus, while files of the second type are required only to be stored in the memory of the apparatus and not to be printed until an operator explicitly so requests at the apparatus by selecting by means of the operator control panel. The type of file involved is apparent from an attribute added to the file.

[0049] Processing of a data file of the first type is referred to in this description as automatic printing (AP).

[0050] Processing of a data file of the second type is referred to as interactive printing (IP). The procedure with this is as follows (see Fig. 2).

[0051] A second type data file for printing sent by a workstation via the network is received by the InputHandler 15. The latter extracts from the file a number of predetermined identification data and passes such data to JobServer 21, which in turn transmits the data to JobManager 12. In this example, the extracted identification data comprise the name of the owner and the name of the file itself. The file is then stored unchanged in the storage unit 20, whereafter the apparatus passes into the standby mode.

[0052] JobManager 12 manages an administration system in which the identification data of all the data files for printing stored in the storage unit 20 are entered. If a new file is supplied via the network, then the Job Manager 12 adds the identification data thereof in connection with the name of the owner/sender to the administration system.

[0053] The storage unit 20 together with the administration system of the JobManager 12 form, as it were, a set of "logic storage spaces" for data files, each logic storage space being allocated to one user. Thus in actual fact storage in the user's logic storage space means that the file is stored in the storage unit 20 and entered in the administration system in connection with the name of that user. A logic storage space can be protected by a code specific to the owner/user, and in practice this means that an operator can only obtain information concerning the files stored in a specific logic storage space after he has input this code.

[0054] There can also be one or more logic storage spaces for general use which are not protected by a code, so that everyone has access to that logic storage space. All kinds of files used by numerous users, for example specific forms, can be stored in a public storage space of this kind.

[0055] The manager of the apparatus can set the JobManager 12 so that it does not accept any print jobs which are required to be printed immediately (files of the first type or AP). In that case, the JobManager automatically converts such jobs into interactive print jobs (IP) and stores the data file in storage unit 20 in the form of files of the second type.

[0056] When an operator wants to have a specific data file of the second type printed, he must give a command for this by means of the apparatus operator control panel 160. In response to this, the data file is brought out of the storage unit 20 and converted to printable data by the PrintHandler 25, and after intermediate storage in the set memory 4 the data are processed by the printer unit 5 to give a print. A print file of the second type can be protected by means of a code by the sender. This code has the form of an attribute to the print file. If a user wants to print this file interactively, he must input the security code on the operator control panel before the file is printed.

[0057] When a data file of the second type has been printed, it remains in principle stored in the storage unit 20 until it is removed by the user himself or the manager of the apparatus. To this end, he gives a command for removal of a selected file. In response to this the JobManager 12 passes a command to the JobServer 21 to erase the intended file from the storage unit 20 and it removes the identification data of that file from its administration system.

[0058] The operator control panel 160 belonging to the operator control unit 13 is shown in Fig. 3 and comprises a display screen 60, such as an LCD display, and a number of keys, namely a start key 61, number keys 62, correction key 63, storage key 67 and selection keys 64A E, 65A-D and the key cluster 66A-D. All these elements are connected to the operator control unit 13, which in response to operation of the keys passes signals to the JobManager 12 and which also controls the display screen 60 to display options and messages to the operator.

[0059] When the apparatus has been switched on, the display screen 60 displays an image formed by a number of vertical columns, each situated above one of the selection keys 64A E. Each column relates to a specific basic function of the apparatus and shows the different possible settings for that basic function. For example, the furthest left column is allocated to the choice between a copying function, in which a document is scanned by the scanner and then reproduced, a printer function for interactive printing, in which a print is made using a data file of the above-mentioned second type sent using the network for printing, a scanner function, in which a document is scanned while generating a scan file that can then be fetched by a workstation, and a deferred copying function ("scan now-print later'), in which a document is scanned while generating a print file of the second type which is stored in the storage unit of the apparatus and can be printed with the printer function. The setting selected at any time, the copying function in this case, is indicated by a marker, such as a dark dot, or by highlighting.

[0060] By actuating a selection key an operator can choose a different setting, e.g. in accordance with a cyclic pattern. As a result of a change of a setting the function of one or more of the other selection keys may change, because the old function is no longer relevant and other selection options are required. Different text relating to the new function then appears in the associated column of the display screen 60.

[0061] The selection keys 65A-D offer the possibility of bringing up a different set of functions which cannot be displayed by the restricted dimensions of the display screen 60. These are generally functions which are not required for a simple copying or print job, but which offer the operator more options to obtain special printing results. In this example, these functions comprise shifting the margin on the print, adding covers, and multiple up. The meaning of the keys 65A-D is indicated in an associated field in the display screen 60 directly beneath each key. When one of the keys is actuated the corresponding set of functions is activated and the layout of the display screen 60 is adapted to the associated functions. At the same time, this selection is displayed by framing or otherwise making conspicuous that field on the display screen 60 which belongs to the actuated key of the group 65A-D.

[0062] The operator control panel 19 also contains a number display 70 to indicate the number of prints set, as is generally customary on copying machines.

[0063] If the printer function has been selected by key 64A in the "basic settings" group, the columns above the keys 64B (simplex or duplex, both in respect of the original document and the copy sheet), 64C (stapling) and 64D (the choice of format of the print paper) relate to the finishing of the copying job and the column above key 64E relates to light/dark control for the copy.

[0064] Fig. 4 shows the layout of the display screen 60 after the printer function for interactive printing of data files of the second type has been selected by key 64A in the group "basic settings". In this case the keys 64D and 64E now have the function of specifying the data file for printing by selection of users and file name. Different files of the second type, from different users, may in fact be stored in the memory. All these files are entered in the administration system of the JobManager 12, as described above, and can be displayed on the display screen 60 for selection.

[0065] After actuation of key 64D, an operator can select a user name from the list of users who have sent one or more files, and after actuation of key 64E a file name can be selected from the list of files sent by the selected user.

[0066] In response to the actuation of key 64D the column on the display screen above this key is provided with a frame 90 and a star symbol 91 to show that a user name can be selected and the star keys 66A-D are active for that selection. As a preselection, the name of the user who last sent a file to the machine is automatically selected as the name.

[0067] The pair of keys 66A/B is used to proceed alphabetically through all the user names in the list, forwards with key 66A and backwards with key 66B. If there are more names than can be displayed simultaneously

in the frame 90, then as many names as fit within the frame are displayed and the whole list is automatically scrolled through. A bar having text therein in reverse video indicates what name has been selected.

[0068] In response to actuation of key 64E, the column of the display screen above that key is provided with a frame and a star symbol in exactly the same way as the procedure on actuation of key 64D as described above, in order to indicate that a file name can be selected and that the star keys 66A-D are active for that selection. The selection with the star keys is exactly the same as to that involved in the selection of a user name. The last file sent is selected, for example, as a preselection.

[0069] After selection of a file, the printing process is started by actuating the start key 61.

[0070] The operation of the accounting and security unit 27 will now be explained by reference to Fig. 5A and Fig. 5B. This unit both controls access to the copying, scanning and printing, and the accounting for copies, scans and prints made. It has available a database in which an entry can be made for each user by the apparatus manager. For a user, a user code (hereinafter referred to as the "PIN" code) is stored at his user name and a total to which is added the copies and prints made. Each user name also has an authorisation code stored to determine the authorisation of the relevant user to make use of the apparatus. This can be set up by the apparatus manager, so that access can, for example, be occasionally denied. The authorisation can also be automatically denied to a specific user if, for example, a predetermined credit has been used up.

[0071] Fig. 5A describes the case in which a user makes a copy or print at the apparatus. In that case he must first input his user code by means of the number keys on the operator control panel (5-1). If the code is correct (5-2), the accounting and security unit 27 checks the authorisation (5-3). And if this is also in order then the relevant user may make his copies, scans or prints (5-4) and these are added to the user's total usage. If either the user code is incorrect or the user is not authorised, then the unit 27 refuses to release the apparatus for use and reports this on the display on the operator control panel (5-5).

[0072] Fig. 5B describes the case in which a user sends a digital data file from his workstation to the apparatus for immediate printing. The task of the accounting and security unit 27 then consists firstly in checking whether the user name, which always forms part of the data file, occurs in the database (5-11).

[0073] If the database does not contain the user's name for a received print file, then the accounting and security unit 27 makes a new entry in the database (5-15) for this user's name, with an automatic authorisation. The mode in which the accounting and security unit 27 does this is hereinafter referred to as the "dynamic mode". It may be that the accounting and security unit 27 has been brought into a different mode, hereinafter referred to as the "static mode", by the apparatus manager, in which case the user's name is not added to the database and the print job is automatically not carried out (5-16). This first treatment is indicated in Fig. 5B in a block I having a broken-line frame.

[0074] If the check in block I has a positive result, then the authorisation is checked (5-12) and if it is also in order then the print file is processed further (5-13), the prints being added to the user's total usage.

[0075] The access system of the accounting and security unit 27 can also be switched off so that anyone can without difficulty copy, scan and, from a workstation, print. In relation to a print job from the operating control panel on the apparatus, the access system remains partially active, namely for protecting individual print files, as will be described hereinafter.

Copying

[0076] Fig. 6 shows the procedure for making a copy. It is assumed in this case that the access system of the accounting and security unit 27 is switched on.

[0077] At the start of the process (6-10), the apparatus is in the "copying" mode or the operator selects that mode by means of key 64A on the operator control panel 160. The operator control unit 13 now waits for a user code and when the operator inputs this passes it through to the JobManager 12 (6-20). By means of the accounting and security unit 27 the JobManager 12 checks the authorisation of the relevant user (6-30). If this is not in order, then the JobManager refuses to make a copy and reports this on the display on the operator control panel 160 (6-40).

[0078] If the authorisation is in order, then the operator can start copying, by making settings for the process on the operator control panel, placing documents in the input tray 111 of the document feeder 110 and actuating the start key 61 (6-50). The settings and the start command are then transmitted by the operator control unit 13 to the JobManager 12.

[0079] If the access system of the accounting and security unit 27 was switched off, then step 6-50 immediately follows step 6-10.

[0080] The JobManager 12 then gives a command to the CopyController 6 to activate the various parts of the apparatus (6-60). On the command of the CopyController 6 the scanner unit 3, including the document feeder 110, is now started to scan documents one by one and pass the digital data thus generated to the set memory 4, and the printer unit 5 is started to read the digital data out of the set memory 4 and print them on sheets of paper (6-70 and 6-80).

[0081] When all the documents have been scanned and printed, the CopyController 6 reports the job finished to the JobManager 12 (6-90) and the copying action is completed.

Reception of a print file

[0082] Fig. 7 is a description of the procedure on the arrival, via the network, of a data file of the first or second type for printing.

[0083] The relevant data file is received by InputHandler 15. This extracts identification data (including the name of the user and of the file) and print specifications (e.g. printing and finishing parameters), determines whether it is a print file of the first (AP) or of the second (IP) type, reports the job to the JobServer 21 and stores the entire file, i.e. the print specifications and the image data for printing, in the storage unit 20. The JobServer 21 in turn reports the job, with the relevant data, to the JobManager 12.

[0084] If the print file is of the second type, the JobManager enters the job as such in its job administration system, whereafter no further activities take place in respect of this job.

[0085] If the print file is of the first type, the further handling thereof depends on whether the JobManager 12 is in the mode in which it accepts automatic print jobs (AP). If not, the JobManager enters the print job in its job administration system as being an interactive print job IP and does not pass to direct printing. A print-out can be made, however, giving the reasons why the job has not been carried out.

[0086] If the JobManager 12 is in the mode in which it does accept automatic print jobs, it calls in the accounting and security unit 27 to determine whether the job can be processed. The accounting and security unit 27 proceeds as described in connection with block I in Fig. 5B. If this check shows that the file may not be printed, then the JobManager enters the print job in its job administration system as being an interactive print job (IP) and does not pass to direct printing. A message can be printed out on a sheet of paper, however, giving the reasons why the job has not been carried out.

[0087] If the check by the accounting and security unit 27 proves positive, the Job Manager includes the job in the print queue for automatic print jobs (AP-queue), where it has to wait its turn for processing.

Interactive printing

[0088] Fig. 8 shows the course of events when a user gives an interactive print order with the aid of the operator control means on the apparatus operator control panel.

[0089] The user will start by selecting the print function with key 64A (Fig. 3/4). The operator control unit 13 then passes a request to the JobManager 12 to pass a list of all the users who have sent a print job of the second type that has not yet been processed. In response to that request, the JobManager makes up a current list and passes it to the operator control unit 13.

[0090] The operator control unit displays this list on the display, in the column above key 64D (Fig. 4), whereafter the user can select his name. After the user has done this, he actuates key 64E to obtain an overview of his own print jobs. In response to this, the operator control unit 13 gives the selected user's name and a request for a list of print jobs of that user to the JobManager.

[0091] The JobManager now asks the accounting and security unit 27 whether the relevant user's name occurs in its database. The unit 27 then proceeds as described in connection with block I in Fig. 5B. If the name really does occur in the database, the JobManager asks the accounting and security unit 27 whether there is a user's code for this user's name, and, if so, it conducts a dialogue with the user through the agency of the operator control unit 13 in order to check the user's code. If the result is positive, the JobManager makes up a current list of interactive print jobs of the relevant user and passes it through to the operator control unit 13, which submits this list to the user for selection on display 60.

[0092] The user now selects a print file the name of which is transmitted by the operator control unit 13 to the JobManager 12, which in turn asks the JobServer 21 whether a security code was sent with the selected file. If so, then through the agency of the operator control unit the JobManager again carries out a dialogue with the user to check the code. If the result is positive, the JobManager releases the file for printing, and the user can set finishing parameters on the operator control panel, whereafter the user can start the printing process by actuating the start key 61.

[0093] If a user has sent a number of print files each provided with a security code and then wants them all printed interactively, then after a first print file the JobManager in the case of a subsequent print file tries out whether the security code of the preceding protected file is also valid for the current file and will start a new check dialogue with the user only when the current file has a different security code. In this way a user can work faster if he gives a series of print files the same security code. For printing he then only needs to input the code the first time. The use of a single security code is also convenient because the user does not then have to remember a number of different codes.

[0094] This procedure is explained by the following example. Let us assume that a user has sent the following series of print files to the apparatus for interactive printing:

File 1, security code 123
File 2, security code 123
File 3, no security code
File 4, security code 123
File 5, security code 456
File 6, security code 456
File 6, security code 123

[0095] If the user now selects the files consecutively for printing at the apparatus, he must input the code 123 at file 1, whereafter the JobManager releases the doc-

ument for printing. File 2 is automatically released because the code of file 1 is also valid for this. File 3 has no security code and is therefore printed without checking. File 4 has the same security code as the preceding protected file, and is therefore automatically released also. File 5 has a different security code, and here the user must again input a code, whereafter file 6 is automatically released. Finally, another code has to be input for file 7, because although this security code was used previously, it is not the code of the preceding protected file.

Printing process

[0096] Fig. 9 shows the progress of the printing process started either by the JobManager 12 when a print job of the first type (AP) reaches the head of the AP queue, or by the user as an interactive print job (IP). It should be noted here that the JobManager is so programmed as to be able to start an automatic print job only if no activity has been observed on the operator control panel for a predetermined time, e.g. 30 seconds. This prevents a user occupied in a job at the operator control panel from being disturbed by the sudden start of an automatic print job.

[0097] If the access system of the accounting and security unit 27 is switched on, the JobManager now first checks the authorisation of the relevant user (the owner of the print job). If the authorisation is not in order, the process is interrupted. If the print job is an automatic print job, the JobManager records the print file as being of the second type and does not print it. It is possible to make a print giving the reasons why the job has not been carried out. In the case of an interactive print job, the JobManager refuses the order and displays a report thereof on the display at the operator control unit 13.

[0098] If the user is authorised, the JobManager reports the print job to the CopyController 6 and gives a start command for this order to the JobServer, which in turn starts up the PrintHandler 25, so that the latter reads the relevant print file from the storage unit 20, rasterises it, and stores it in the set memory 4. On a report from the PrintHandler to the CopyController 6 to the effect that sufficient image data are stored in the set memory, the CopyController starts the printer unit 5 to make a print.

[0099] In this connection the CopyController first checks whether the print specifications belonging to the print job have been satisfied, for example if there is a stock of the required type of image supports (format, orientation, colour). If these specifications have not been met, then the job is stopped. The CopyController reports this to the PrintHandler, which passes the report through to the JobServer, the latter in turn passes it to the JobManager, and the latter reports, in the case of an interactive print job, the impossibility for printing to be carried out, to the user by a message on the display of the operator control unit 13 or, in the case of an automatic print job, alters the description of the job in its administration system to an interactive print job, so that a user can consequently still start the job from the operator control panel at a later moment. Once again a print can be made showing the reasons why the job has not been carried out.

[0100] If the print job can be processed, the printer unit 5 reads the image data out of the set memory 4, prints them, and reports this to the CopyController 6. When the complete print job has been carried out, the CopyController reports this to the PrintHandler 25, which passes this to the JobServer 21, and the latter in turn to the JobManager 12, which then removes the job from its administration system, thus completing the printing process.

Scanning

[0101] Fig. 10 shows the procedure when a user wishes to have a document scanned by the apparatus in order that the digital data generated in these conditions, hereinafter referred to as the scan file, may be further used for processing or storage at his workstation. The scan file in this case is not transmitted to a predetermined address over the network immediately after generation as is usually the case, but is stored in the storage unit 20 of the apparatus, whereafter it must be called up from a workstation. The procedure with this is as follows.

[0102] Using the key 64A on the operator control panel of the operator control unit 13 the user selects the "scanner" option. In response to this the operator control unit asks the JobManager 12 for a list of all the names of users known to the JobManager, i.e.: all the user names in the database of the accounting and security unit 27. As already stated previously, these user names can be entered in the database by the apparatus manager or be automatically added by the accounting and security unit 27 on receipt of a print order from a workstation. Also, when a program intended for communication with the apparatus is started at a workstation this program can automatically be reported to the apparatus JobManager which then ensures that an entry for the user of the workstation is made in the database.

[0103] In an alternative embodiment, the user names in the database are provided with an attribute which indicates whether they are authorised to make use of the scan function. In that case the list contains only the names of the authorised users.

[0104] The JobManager passes the list of the user names through to the operator control unit 13, which displays this on the display 60 for selection by the operator. This is shown in Fig. 11, which illustrates the display 60 after selection of the scanner function.

[0105] After the user has selected his name, the operator control unit passes this through to the JobManager 12, which by means of the accounting and security unit 27 then checks whether a user code is necessary to obtain access to the scanner function. If that is the case, then by means of the operator control unit 13 it

conducts a dialogue with the user in order to check his code. In the case of a positive result, the JobManager releases the scanner function and automatically generates a name for the data file to be made during scanning, and this is passed to the operator control unit 13, which in turn displays this file name on the display 60, so that the user subsequently knows the name by which he can find the scan file. This automatically generated name can, for example, have the form:
YYYYMMDDhhmmssxxx, which successively shows the year, month, date, hour, minute and second of the scan action, and the serial number of the document in the scanned set.

[0106] In addition, the operator control unit now displays in a form similar to the form for selection of settings for a copying or printing process (cf. Figs. 3 and 4), a possible choice for parameters of the scan process, such as the resolution, the format (e.g. TIFF, BMP, etc.), the magnification factor, and whether the original document is to be scanned on one side or both sides. The user can select his settings from this or he can leave the preselected values as they are. The user then places his original documents in the input tray 111 of the document feeder 110 and actuates the start key 61. In response to this the operator control unit 13 transmits a start command with all the data to the JobManager 12.

[0107] The JobManager now reports the job to the CopyController 6 and sends a start command to the JobServer 21, which in turns starts the ScanHandler 26. The latter transmits a start command to the CopyController 6, which controls the scanner unit 3 in order to transport the original documents one by one to the scanner, scan them, and generate scan files. In these conditions the scanner unit counts the number of original pages scanned. The scan files are stored in the set memory 4 and then transmitted to the ScanHandler, which stores them in the storage unit 20. In addition, the image processing function of the set memory also makes a file with a reduced image of the scanned image, known as a "thumbnail", and this is also stored in the storage unit 20. Thumbnails of this kind are used later for identification in the selection of a scan file.

[0108] When all the documents have been scanned, the ScanHandler 26 reports the job as finished to the JobServer, which in turn transmits this to the JobManager. The latter passes the finished report to the operator control unit 13, which displays it on the display 60 of the operator control panel, together with the number of pages scanned, so that the user can check whether any documents have been skipped. That concludes the scan job.

Scanning with scan profile

[0109] In a specific embodiment of the apparatus according to the invention, a user can also keep for other scan jobs, settings of scan parameters hereinafter referred to jointly as the scan profile. These parameters are then stored in the storage unit 20 under the user's name in the administration system of the JobManager 12. A scan profile can be brought up later, so that scan jobs can be programmed more quickly. This is described in Fig. 12. The scan profile can also contain an individual name for the scan file made, this name being respected by the JobManager 12 and being used instead of the automatically generated file name, or be combined therewith. This facilitates identification of the file by a user.

[0110] Fig. 12 shows the procedure in carrying out a scan job using a scan profile. This differs only in a limited number of points from the procedure described above with reference to Fig. 10. After the JobManager 12 by means of the accounting and security unit 27 has established the fact that a user is authorised to make use of the scanner function and has generated a file name for the job that has just started, it also checks in its administration system whether scan profiles are stored under the name of this user. If so, it makes a list thereof and passes it, together with the generated file name, to the operator control unit 13, which displays both on the display. Apart from a default profile, one or more profiles for general use can also be added to this list, stored in a public set in the storage unit 20. The reproduction of scan profiles has the same form as that of files for printing in Fig. 4. The default settings have been selected as a preference. The user can now select a profile from the displayed list. The selection should be confirmed by actuating the key beneath the selection column, whereafter the operator control unit 13 displays the settings of the selected profile on the display. Starting from the settings which are then applicable the user can then change one or more thereof. If he then actuates the start key 61 (or if he actuates the start key without selecting a different profile from the preselected default profile), the operator control unit 13 transmits a start command with the applicable settings to the JobManager 12, and the remainder of the procedure is as described with reference to Fig. 10.

Making and storing the scan profile

[0111] Fig. 13 shows the procedure for making and storing a scan profile from the apparatus operator control panel. The storage key 67 is used for this.

[0112] In response to actuation of the storage key 67, the operator control unit 13 asks the JobManager 12 for a list of all the user names it knows, i.e., all the user names in the database of the accounting and security unit 27.

[0113] The JobManager passes the list of user names to the operator control unit 13, which displays it on the display 60 for selection by the operator. The operator control unit 13 also asks the operator, by a message in the message window on the top left of the display 60, whether the operator wants to make a scan or a print profile. The operator must respond to this by selecting

the required function in the left-hand column above key 64A, i.e. in this case "scanner". On this latter selection the selection screen of the chosen function is displayed on the display and the operator can make his settings. If required, he can also use the other sets of parameters, which can be called up with the keys 65A-D.

[0114] The operator then again actuates storage key 67 and in response to this the operator control unit 13 sends the user name, function and chosen settings to the JobManager 12, which automatically generates a name for the profile, enters the profile under that name in its administration system in connection with the user's name and passes the received profile together with the profile name to the JobServer 21 for storage in the storage unit 20.

[0115] The JobManager 12 then sends the generated profile name to the operator control unit 13, which displays it on the display 60, where it subsequently disappears either by the start of a new operation or after expiry of a predetermined interval of time.

[0116] The automatically generated file name always has the extension ".pro" and if required can be replaced by a "rename" mechanism from the user's workstation by another more usable name. A standard form can be required, e.g. "sc_XXXXXX.pro", where XXXXXX has a logical text.

[0117] Fig. 14 shows the procedure in making a scan profile or changing an existing scan profile from a workstation. This requires a program specially intended to communicate with the apparatus. This program, which will hereinafter be referred to as the "WS program" has its own user identification and authorisation procedure so that the JobManager 12 does not need to repeat this check.

[0118] In the WS program a user selects a "scan profile editor". Within this sub-program the user can select a "new" function, by means of which a new profile is prepared. On the screen at his workstation the user then has a window in which he can set all the scan parameters. This can, for example, be an image identical to the image on the display 60 of the apparatus operator control unit 13, with an image of the operator control keys, which can then be operated by means of a cursor, although some other representation can be given.

[0119] If the user has made the settings and given a name for the profile, then on his command ("save") the profile is transmitted via the network to the InputHandler 15, which stores it in the storage unit 20 and reports it to the JobServer 21. This passes information concerning the profile to the JobManager 12, which enters it in its administration system.

[0120] The user can also amend an existing scan profile, both in respect of the scan parameter settings and the name. This is possible by selecting a "recall" function in the scan profile editor. The WS program then asks the JobManager 12 for the scan profiles stored under the name of the relevant user, and the JobManager 12 gives an overview, which is then displayed on the workstation screen for selection. After the user has selected a specific scan profile, the WS program asks the JobServer 21 for the contents of that profile, and the JobServer 21 brings it from the storage device 20 and sends it via the OutputHandler 16, whereafter it is displayed on the workstation screen. The user can now make changes and use the "save" command to save them, whereupon the WS program sends the new contents of the profile to the apparatus, where it is again stored in the storage device 20 and reported to the JobManager 12.

[0121] The name of a scan profile always has the extension ".pro".

Fetching a scan file using workstation

[0122] Fig. 15 shows the procedure when a user wishes to fetch a scan file stored there under his name, using his workstation.

[0123] The WS program for communication with the apparatus is also required for this operation. As already stated, this program is provided with its own user identification and authorisation procedure.

[0124] In the WS program, the user now selects a presentation function for all the scan files stored under his name in the storage unit 20. The WS program then asks for the list of these from the JobManager 12, which compiles the list from its own administration system and sends it back. In addition, the JobManager 12 by means of the JobServer 21 and OutputHandler 16 sends to the workstation the thumbnail belonging to each scan file. This can, for example, also be the thumbnail of the first page of a multi-page document.

[0125] The WS program now displays on the workstation screen the list of scan files with the associated thumbnails for selection by the user. The user is also offered a choice for the transport mode (encrypted or not), the required format of the file, and the name under which the file is to be imported (note that the file still has an automatically generated name which contains no information as to the contents). After making the settings, the user selects the function "upload", whereupon the WS program sends a request to the JobManager 12 to forward the selected file. The JobManager passes the order to the JobServer 21, which compares the required file format with the current format in which the file is stored in the storage unit 20. If the two formats are different, the JobServer 21 gives the conversion unit 28 an order to read out the file, convert it, and store it again in the storage unit 20.

[0126] The JobServer then starts the OutputHandler 16 to transmit the file to the workstation. When it has completed its task, it reports this to the JobServer 21, which erases the file from the storage unit 20 and passes it on to the JobManager 12, which in turn removes the file from its administration system. Alternatively, the scan file can be kept until the user removes it actively.

Print profile

[0127] The use of a profile having previously prepared settings can also be used for interactive printing of print files (described with reference to Fig. 8). In that case, in the step in which the print files are displayed for selection, the profiles, now referred to as print profiles, are also displayed. Prior to selection of a print file, the user can now first select a print profile, whereafter the operator control unit 13 adapts the settings thereto. The user then selects a print file, whereupon everything progresses as already described with reference to Fig. 8. If the user does not select a profile, then the default settings remain operative.

[0128] The making and storing of print profiles is completely similar to the making and storing of scan profiles. In this connection reference should be made to the descriptions of Figs. 13 and 14. A print profile will have the general name "pr_XXXXXX.pro", where XXXXXX has a logical content.

Deferred copying

[0129] A "deferred copying" function is also supported by means of the described embodiments of scanning and printing. In this function an original document or a set of documents is scanned, whereafter the digital image data thus generated are stored in the storage unit 20 under the user's name, and can then, at a later time, be brought up for printing. This progresses as follows.

[0130] The function is started by selecting the option "deferred copying" (scan now - print later) in the column above key 64A on the operator control panel. This is then followed by exactly the same procedure as described with reference to Fig. 10 or Fig. 12 for the scanning of documents, in which case the file of generated image data is now so administered by the JobManager that when the interactive print function is called up it is included in the list of files for selection for printing. The process is completed on completion of the scan job.

[0131] In order then to print the file, a user should select the option "printer" in the column above key 64A on the operator control panel, in which case as already described the scan files of "deferred copying" jobs are now also displayed for selection in the column above key 64E. The printing process is fully identical to that described with reference to Fig. 8.

[0132] In an alternative embodiment, in the case of "deferred printing", after completion of the scanning process the scan file is not stored as an interactive print job, but is added by the JobManager 12 to the print queue for automatic print jobs (AP queue) and automatically printed when it comes to the head of the queue. This embodiment is suitable particularly for situations in which the apparatus is placed in a central reprographic department, in which jobs are processed in a continuous series.

Special applications

[0133] A print file of the second type (IP) can be provided with an extra attribute by the WS program, so that when received in the apparatus according to the invention it is stored in the storage unit 20 under the name of a user other than the sender. In this way, a specific file can also be distributed over a group of users. The recipients, who can be warned by e-mail, then have the opportunity of having the file actually printed for their own use. If required, the recipients can also first bring up the intended print file to their workstation, in exactly the same way as described with reference to Fig. 15 in connection with scan files. After inspection of the file and the decision that it should really be printed, they then send the file, optionally as a file of the first or second type, back to the apparatus for printing there.

[0134] The possibility of receiving print files from other users can be programmed for a specific user by means of the Job Manager, there being added to the entry of that user in the database of the accounting and security unit 27 a data item which either authorises the receipt of such files or not. This data item can if required be so extended that it authorises only the receipt of files from specific other users referred to in the data item, and hence obstructs those of other users.

[0135] Although the invention has been described with reference to the above exemplified embodiment, it will be clear to one skilled in the art that other embodiments are possible within the text of the claims. They will be considered as coming within the protection of this patent.

Claims

1. A digital image reproduction apparatus comprising

a scanner unit,
a printer unit,
a memory,
an operator control unit integrated in the apparatus and provided with a keyboard and a display for giving operator control commands to the apparatus by a user,
a network connection unit for coupling to a network for the purpose of communication with a digital external environment comprising at least a number of workstations of users,
a management unit connected to the said scanner unit, printer unit, memory and network connection unit, and, via the network connection unit, to the said workstations, which management unit maintains logic storage spaces in the memory, each allocated to a specific user,

wherein the management unit, when receiving from a said user's workstation a digital data file for print-

ing, stores said file in the logic storage space of the relevant user and passes it for printing to the said printer unit only on a command from the operator control unit, which command identifies the relevant file,
and also, on receipt from the operator control unit of an order for scanning, such order being provided with a user identification, stores the digital data generated by the scanner unit in executing the said order in the logic storage space of the relevant user and passes it to a workstation of the relevant user only on a command from the latter workstation, which command identifies the relevant file.

2. Apparatus according to claim 1,
wherein the management unit, on receiving from a workstation a digital data file for printing, such file being provided with a user identification, checks whether it already manages a logic storage space for the relevant user, and if that is not the case, adds a logic storage space for the relevant user and stores therein the received digital data file.

3. Apparatus according to claim 1,
wherein a user's workstation is provided with a program intended for communication
with the apparatus, and when the said program starts up reports to the management unit giving an identification of the user, and
wherein the management unit, on receiving the said reporting, checks whether it already manages a logic storage space for the relevant user and, if that is not the case, adds a logic storage space for the relevant user.

4. Apparatus according to claim 1,
wherein the operator control unit is provided with means for a user to set print parameters in accordance with which a print order must be executed by the printer unit, and
also means whereby print parameters set by a user, in combination with an identification of the relevant user, are passed to the management unit,
wherein furthermore the management unit is provided with means for receiving from a workstation print parameters, also in combination with an identification of the user, and wherein the management unit is provided with means for storing the said passed and received print parameters in the logic storage space of the relevant user.

5. Apparatus according to claim 4,
wherein the management unit is provided with means whereby, on a command from the operator control unit, such command specifying a user and a group of print parameters stored in the memory, the said group of print parameters is read out of the logic storage space of the relevant user and transmitted to the printer unit for printing a digital data file in accordance therewith.

6. Apparatus according to claim 1,
wherein the operator control unit is provided with means whereby a user can set scan parameters in accordance with which a scan order is to be executed by the scanner unit and
also means whereby scan parameters set by a user, in combination with an identification of the relevant user, are transmitted to the management unit,
wherein furthermore the management unit is provided with means whereby scan parameters, also in combination with an identification of a user, are received from a workstation,
and wherein the management unit is provided with means for storing said passed and received scan parameters in the logic storage space of the relevant user.

7. Apparatus according to claim 6,
wherein the management unit is provided with means whereby on a command from the operator control unit, such command specifying a user and a group of scan parameters stored in the memory, the said group of scan parameters is read out of the logic storage space of the relevant user and transmitted to the scanner unit for scanning a document in accordance therewith and in so doing generating a digital data file.

8. Apparatus according to claim 1,
wherein the management unit on receiving from the operator control unit a deferred copying order provided with an identification of a user, stores the digital data generated by the scanner unit in executing the said order in the logic storage space of the relevant user and passes it for printing to the said printer unit only on a command from the operator control unit, which command identifies the relevant file.

9. Apparatus according to claim 1,
wherein the management unit manages a directory structure in the memory, the said logic storage spaces being formed by directories.

10. Apparatus according to claim 1,
wherein the management unit manages a database in the memory, the said logic storage spaces being formed by entries in said database.

11. Apparatus according to claim 1,
wherein the management unit on a command for this purpose from the operator control unit, generates a list of users for whom it manages a logic storage space in the memory, and
transmits this list to the operator control unit which in turn displays at least a part of the list on the dis-

play for selection by an operator, whereafter the operator control unit interprets a selection made by the operator as being identification of a user.

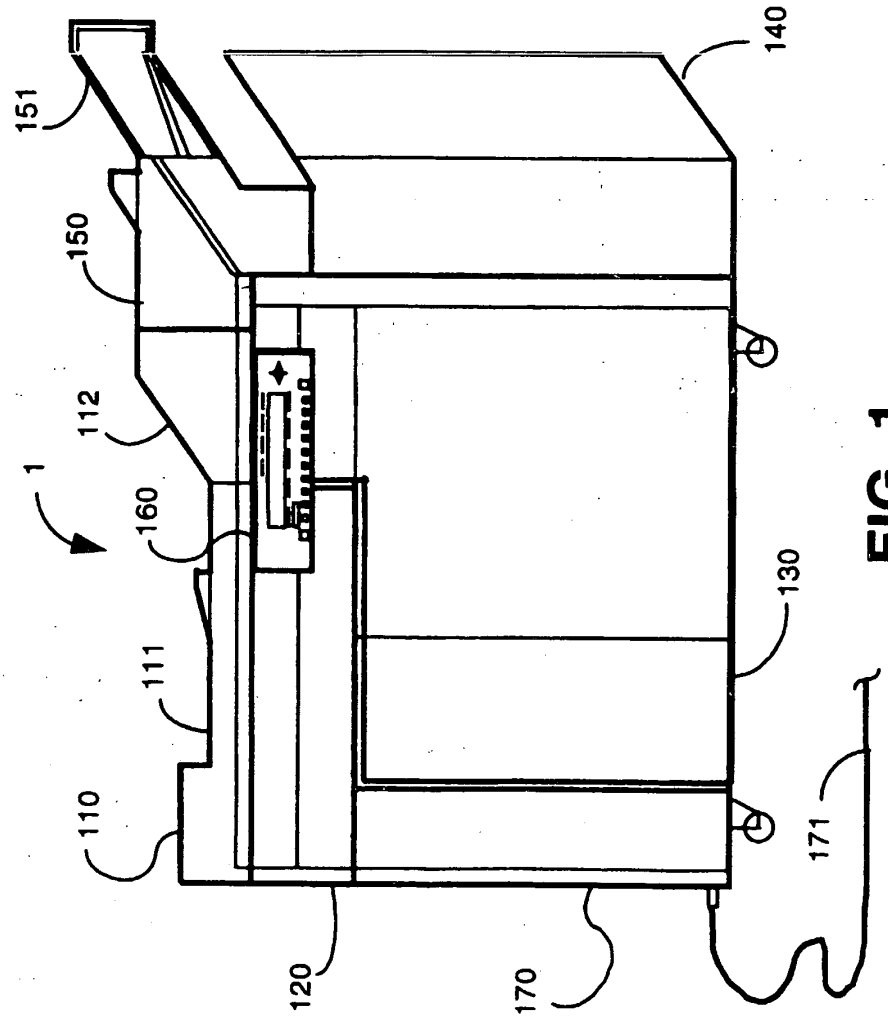


FIG. 1

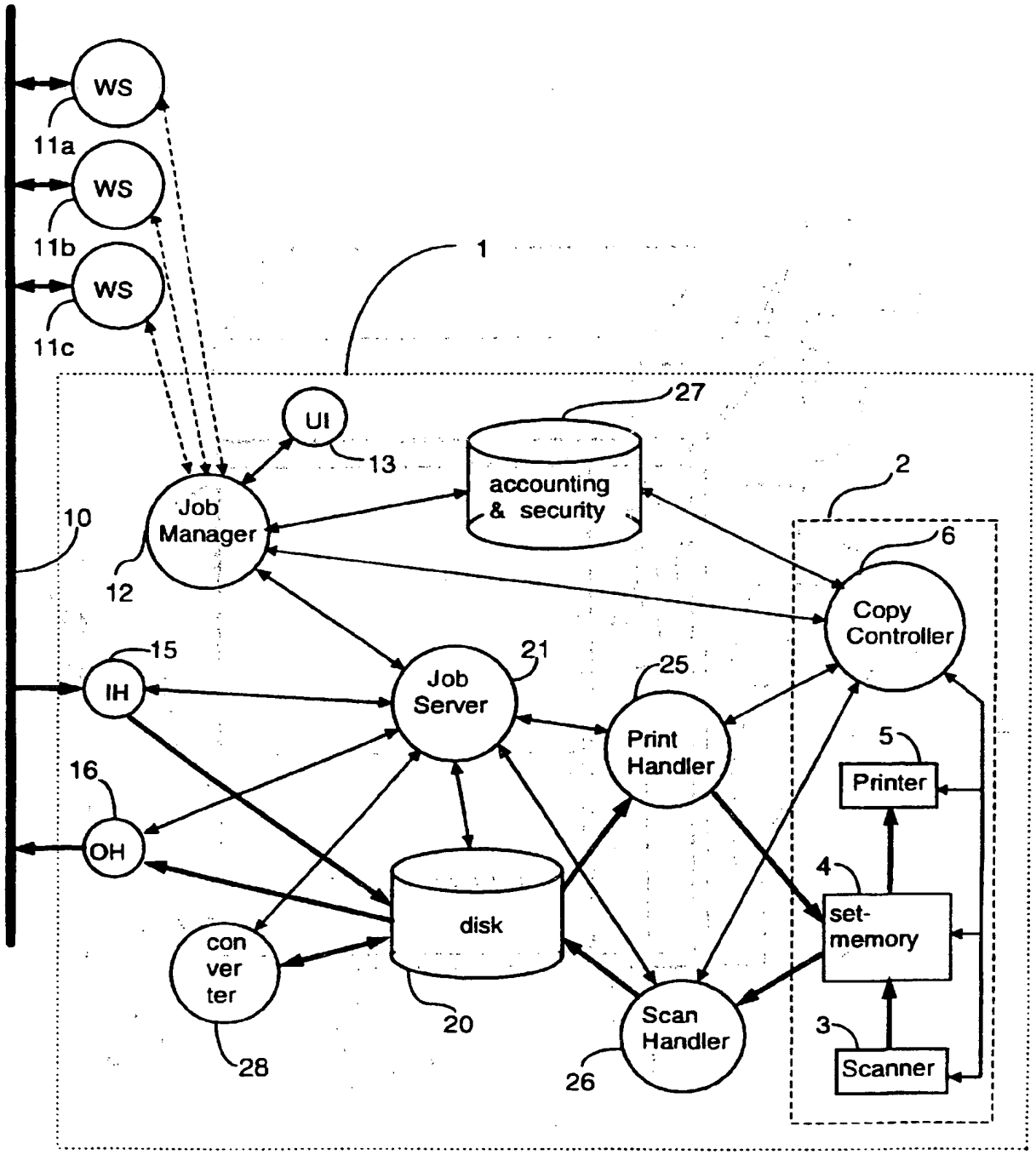

WS
11a
WS
11b
WS
11c
1
UI
13
27
accounting
& security
2
10
Job
Manager
12
6
Copy
Controller
15
IH
Job
Server
21
25
Print
Handler
5
Printer
16
OH
4
set-
memory
disk
con
ver
ter
20
Scan
Handler
3
Scanner
28
26

FIG. 2

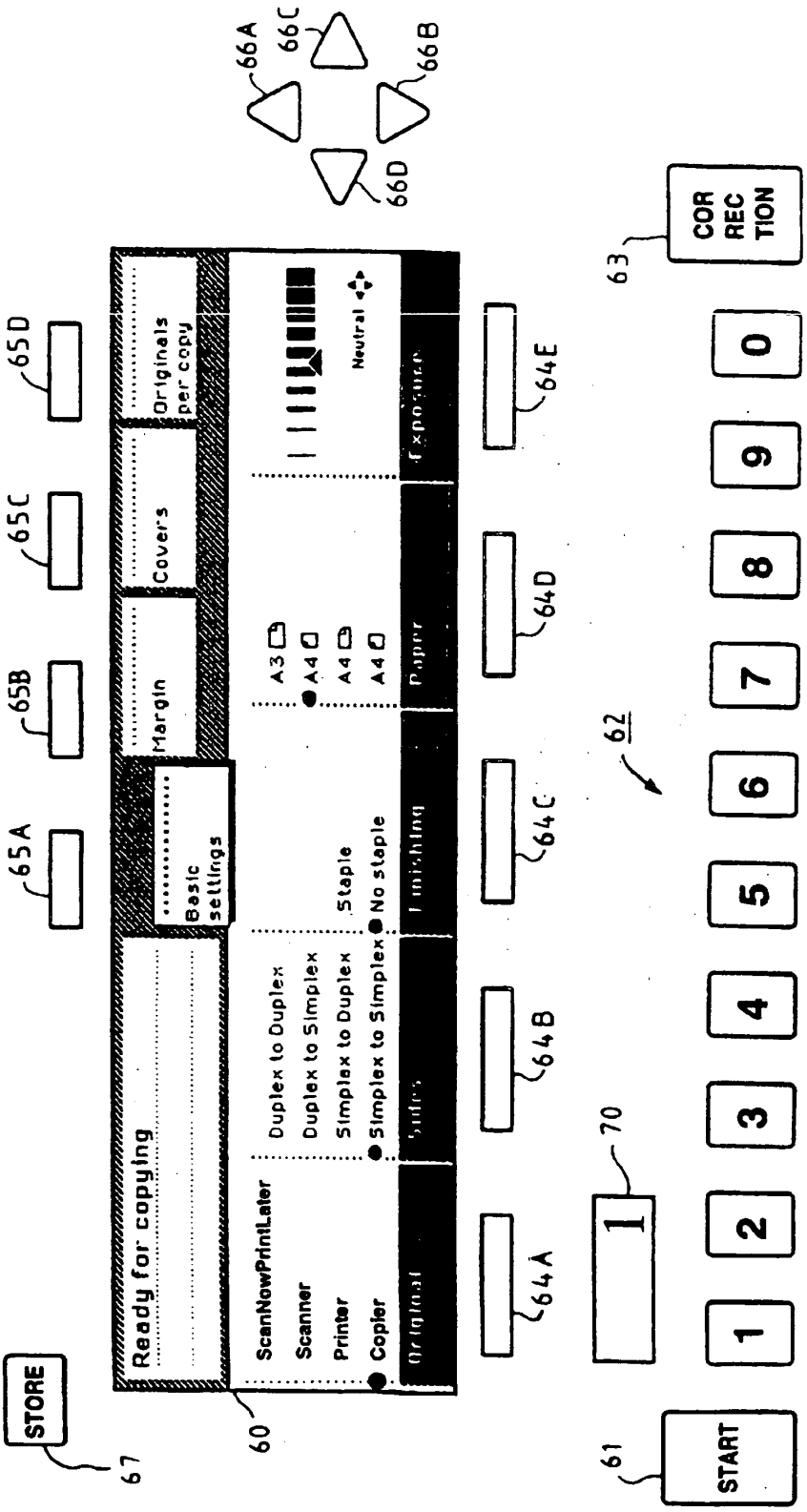

STORE
67
Ready for copying
Basic settings
Margin
Covers
Originals per copy
65A
65B
65C
65D
66A
66B
66C
66D
60
ScanNowPrintLater
Scanner
Printer
Copier
Duplex to Duplex
Duplex to Simplex
Simplex to Duplex
Simplex to Simplex
Staple
No staple
A3
A4
A4
A4
Neutral
Original
Finishing
Paper
Exposure
64A
64B
64C
64D
64E
62
63
COR REC TION
70
1
START
61
1
2
3
4
5
6
7
8
9
0

FIG. 3

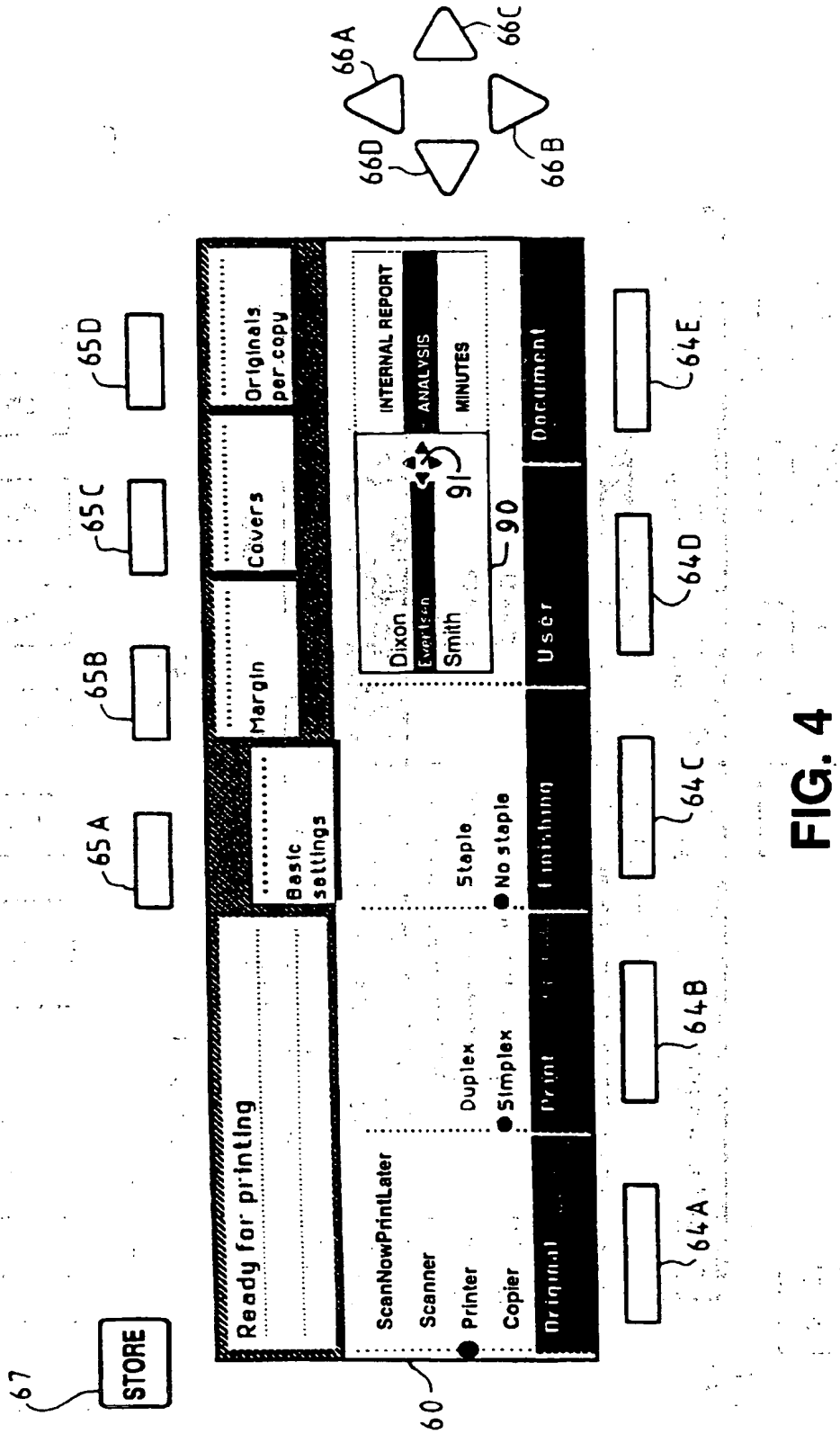

66A
66C
66D
66B
65D
65C
65B
65A
Originals per copy
Covers
Margin
Basic settings
Ready for printing
INTERNAL REPORT
ANALYSIS
MINUTES
Dixon
Smith
91
90
User
Document
Finishing
Staple
No staple
Print
Duplex
Simplex
ScanNowPrintLater
Scanner
Printer
Copier
Original
64E
64D
64C
64B
64A
STORE
67
60

FIG. 4

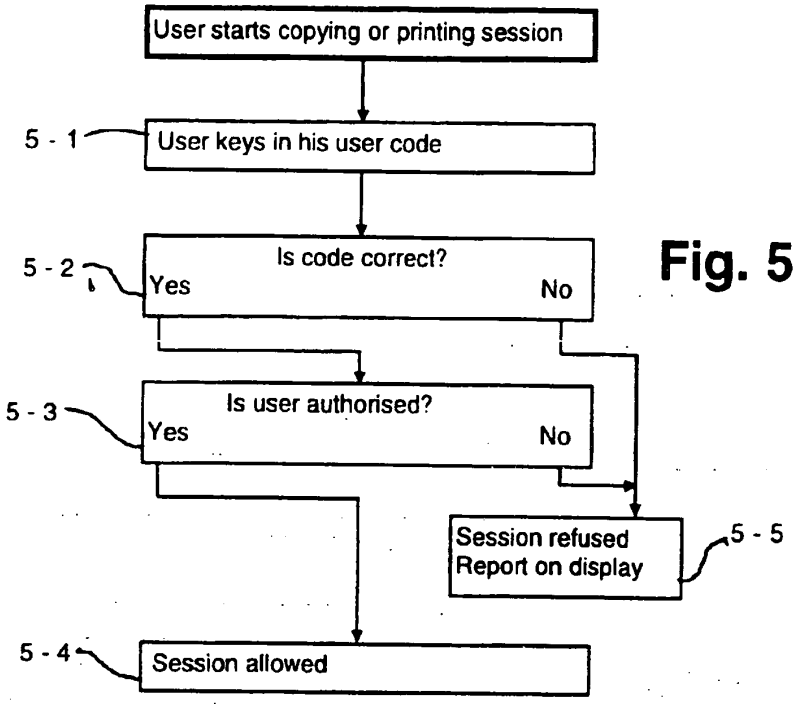

User starts copying or printing session
5 - 1
User keys in his user code
5 - 2
Is code correct?
Yes
No
5 - 3
Is user authorised?
Yes
No
Session refused
Report on display
5 - 5
5 - 4
Session allowed

Fig. 5A

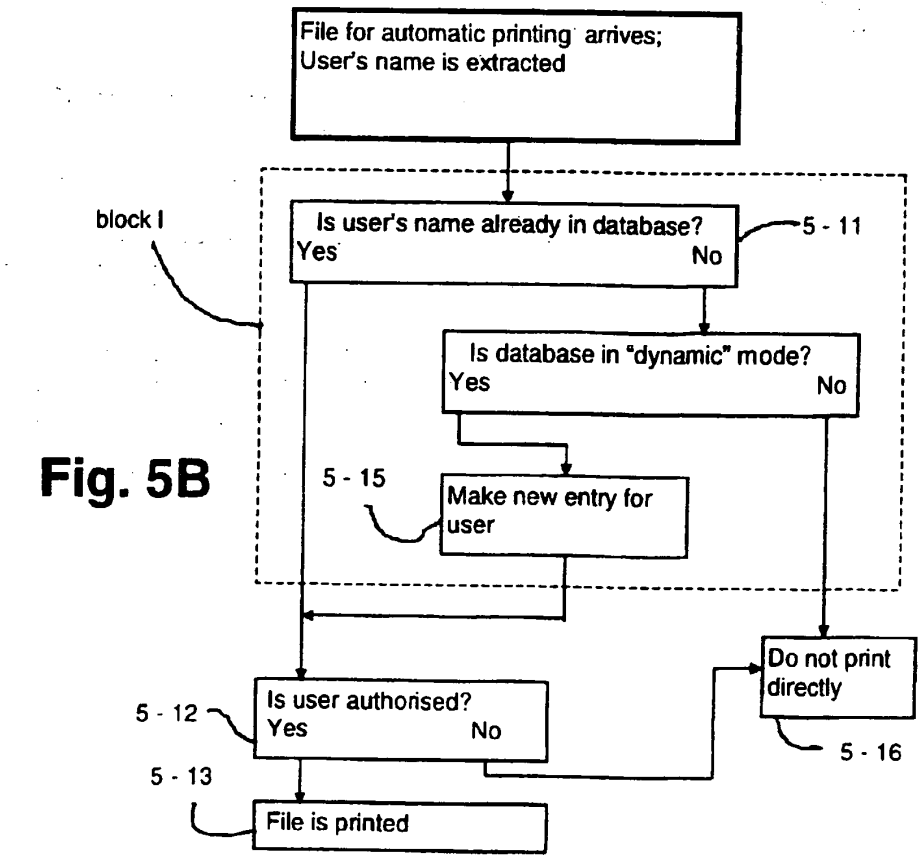

File for automatic printing arrives;
User's name is extracted
block I
Is user's name already in database?
Yes
No
5 - 11
Is database in "dynamic" mode?
Yes
No
5 - 15
Make new entry for user
Do not print directly
5 - 16
5 - 12
Is user authorised?
Yes
No
5 - 13
File is printed

Fig. 5B

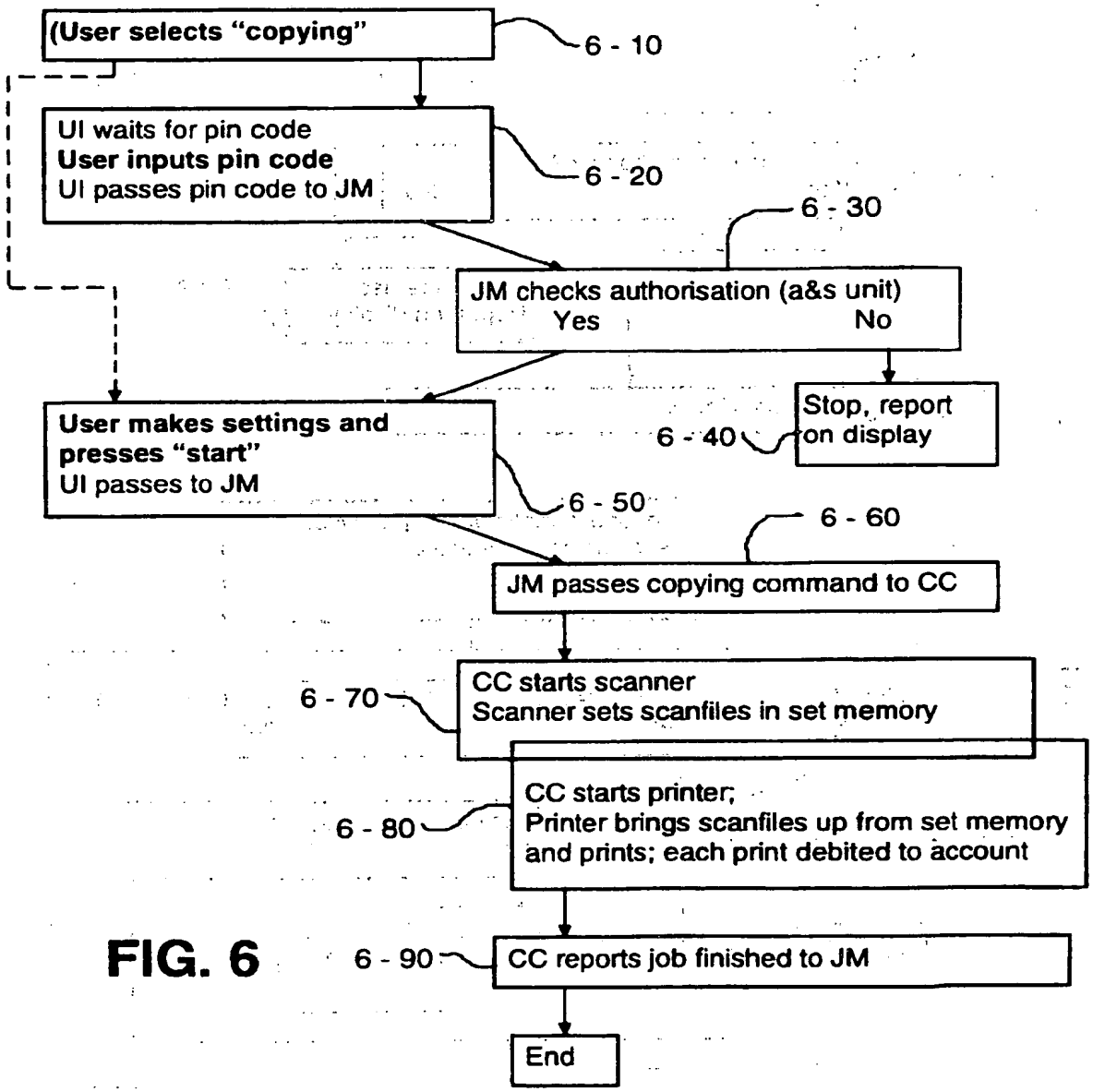

(User selects "copying"
6 - 10
UI waits for pin code
User inputs pin code
UI passes pin code to JM
6 - 20
6 - 30
JM checks authorisation (a&s unit)
Yes
No
Stop, report on display
6 - 40
User makes settings and presses "start"
UI passes to JM
6 - 50
6 - 60
JM passes copying command to CC
6 - 70
CC starts scanner
Scanner sets scanfiles in set memory
CC starts printer;
Printer brings scanfiles up from set memory and prints; each print debited to account
6 - 80
6 - 90
CC reports job finished to JM
End

FIG. 6

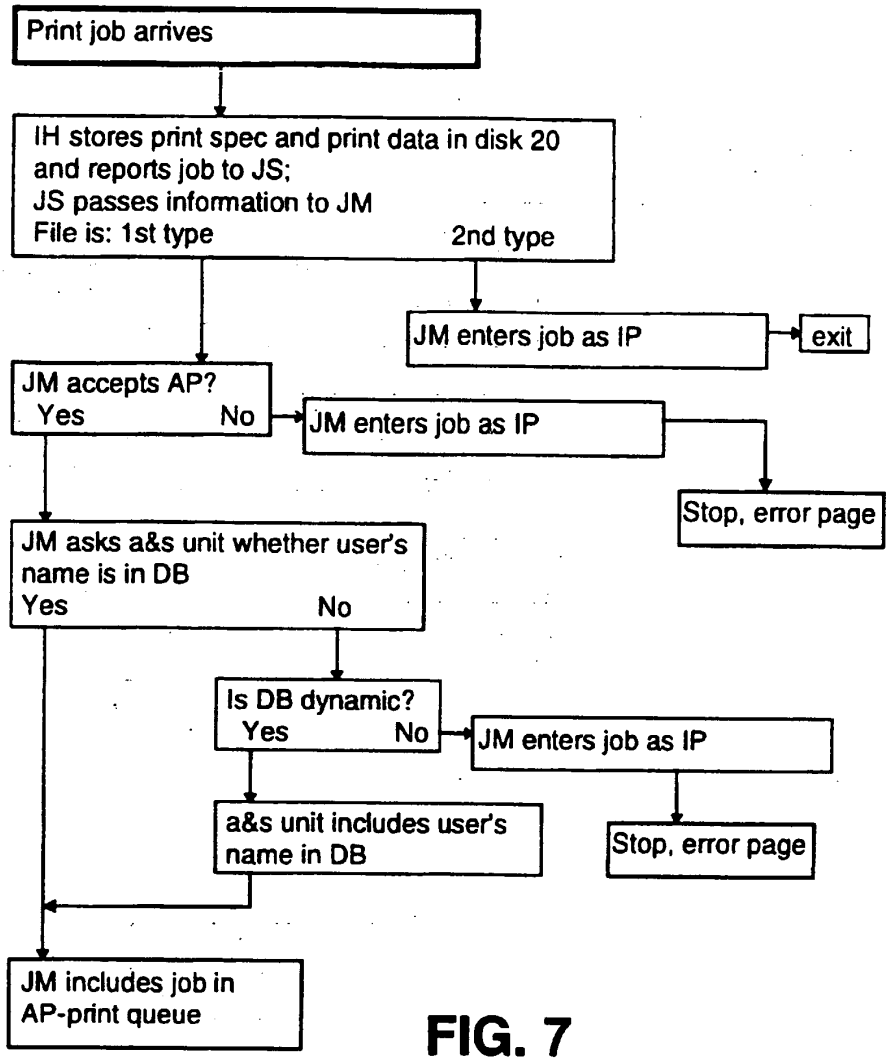

Print job arrives
IH stores print spec and print data in disk 20
and reports job to JS;
JS passes information to JM
File is: 1st type
2nd type
JM enters job as IP
exit
JM accepts AP?
Yes
No
JM enters job as IP
Stop, error page
JM asks a&s unit whether user's
name is in DB
Yes
No
Is DB dynamic?
Yes
No
JM enters job as IP
a&s unit includes user's
name in DB
Stop, error page
JM includes job in
AP-print queue

FIG. 7

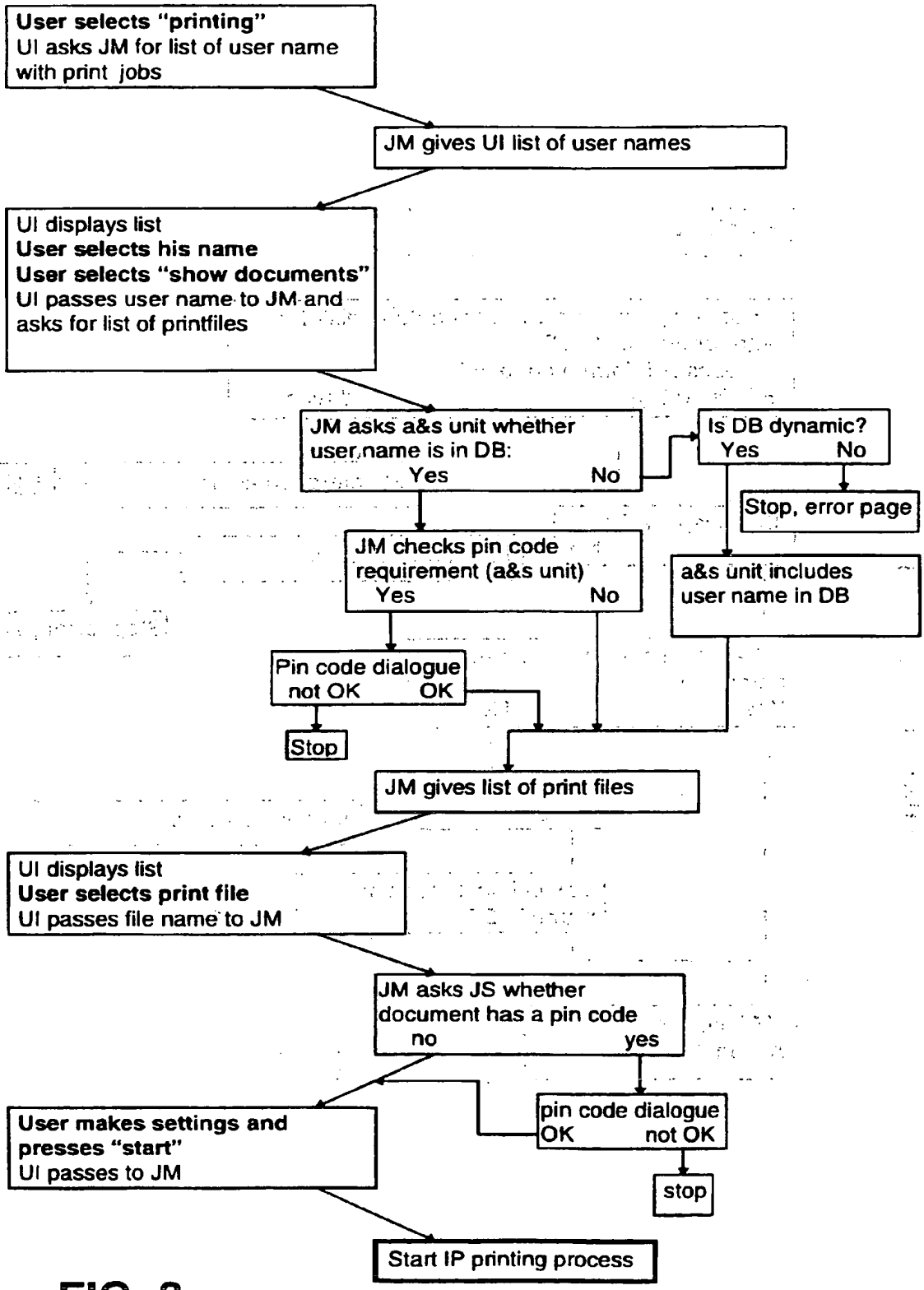

User selects "printing"
UI asks JM for list of user name with print jobs
JM gives UI list of user names
UI displays list
User selects his name
User selects "show documents"
UI passes user name to JM and asks for list of printfiles
JM asks a&s unit whether user name is in DB:
Yes
No
Is DB dynamic?
Yes
No
Stop, error page
JM checks pin code requirement (a&s unit)
Yes
No
a&s unit includes user name in DB
Pin code dialogue
not OK
OK
Stop
JM gives list of print files
UI displays list
User selects print file
UI passes file name to JM
JM asks JS whether document has a pin code
no
yes
pin code dialogue
OK
not OK
stop
User makes settings and presses "start"
UI passes to JM
Start IP printing process

FIG. 8

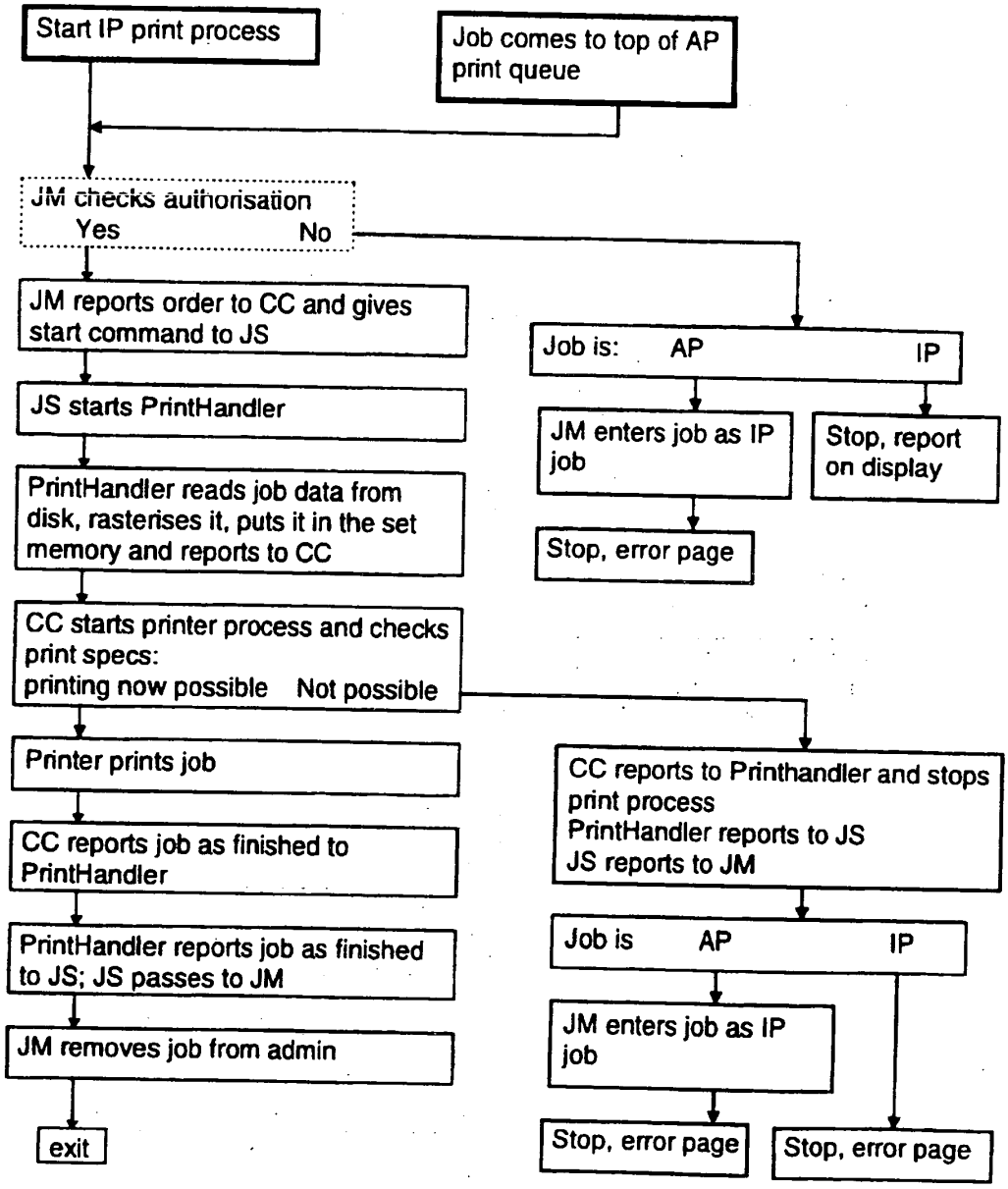

Start IP print process
Job comes to top of AP print queue
JM checks authorisation
Yes
No
JM reports order to CC and gives start command to JS
JS starts PrintHandler
PrintHandler reads job data from disk, rasterises it, puts it in the set memory and reports to CC
CC starts printer process and checks print specs:
printing now possible
Not possible
Printer prints job
CC reports job as finished to PrintHandler
PrintHandler reports job as finished to JS; JS passes to JM
JM removes job from admin
exit
Job is:
AP
IP
JM enters job as IP job
Stop, report on display
Stop, error page
CC reports to Printhandler and stops print process
PrintHandler reports to JS
JS reports to JM
Job is
AP
IP
JM enters job as IP job
Stop, error page
Stop, error page

FIG. 9

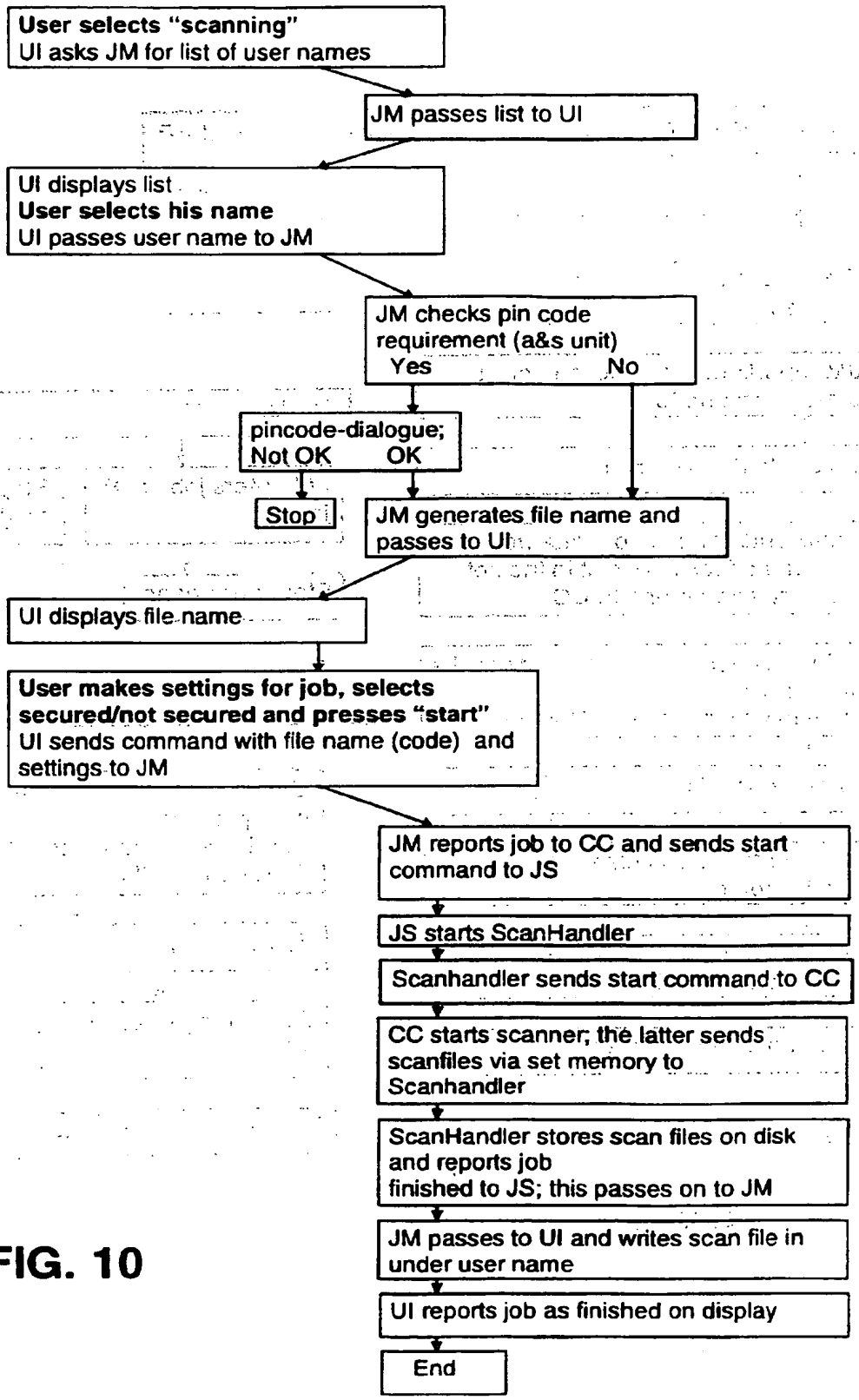

User selects "scanning"
UI asks JM for list of user names
JM passes list to UI
UI displays list
User selects his name
UI passes user name to JM
JM checks pin code requirement (a&s unit)
Yes
No
pincode-dialogue;
Not OK
OK
Stop
JM generates file name and passes to UI
UI displays file name
User makes settings for job, selects secured/not secured and presses "start"
UI sends command with file name (code) and settings to JM
JM reports job to CC and sends start command to JS
JS starts ScanHandler
Scanhandler sends start command to CC
CC starts scanner; the latter sends scanfiles via set memory to Scanhandler
ScanHandler stores scan files on disk and reports job finished to JS; this passes on to JM
JM passes to UI and writes scan file in under user name
UI reports job as finished on display
End

FIG. 10

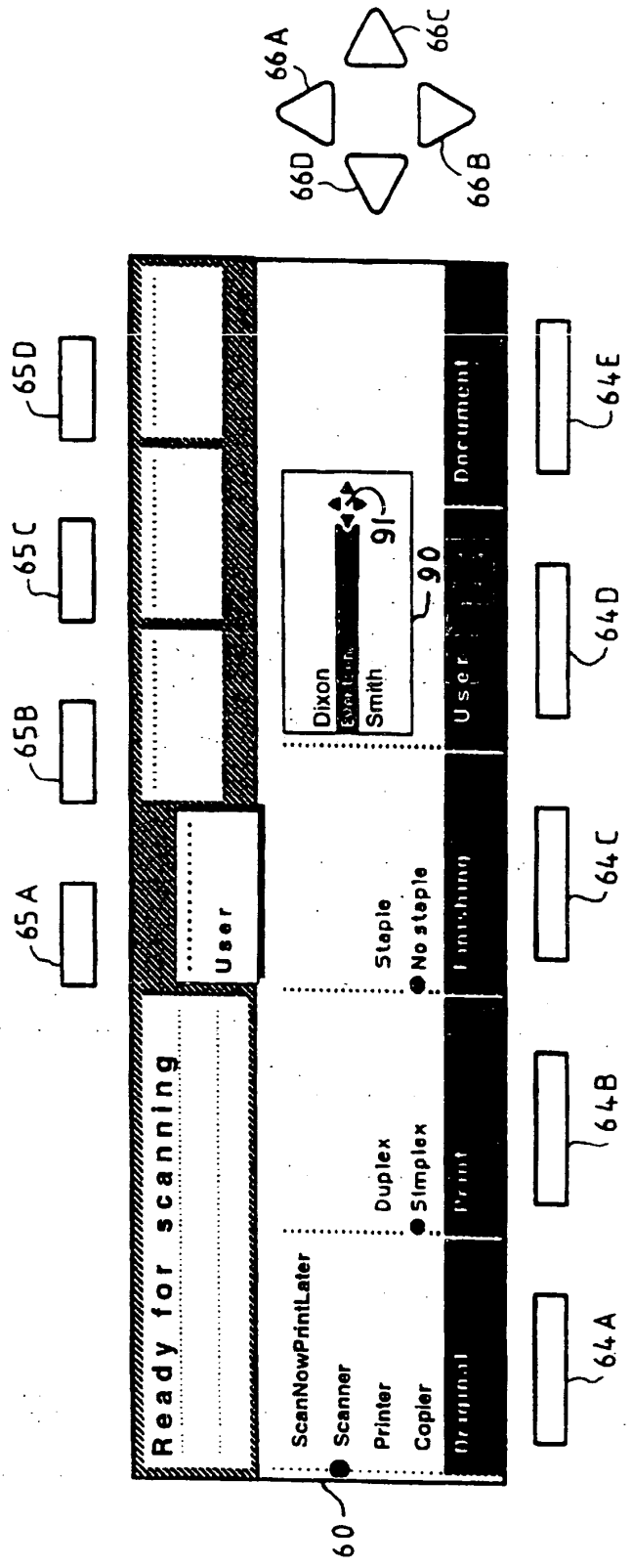

66A
66C
66D
66B
65A
65B
65C
65D
Ready for scanning
User
ScanNowPrintLater
Scanner
Printer
Copier
Duplex
Simplex
Staple
No staple
Dixon
Smith
90
91
User
64A
64B
64C
64D
64E
60

FIG. 11

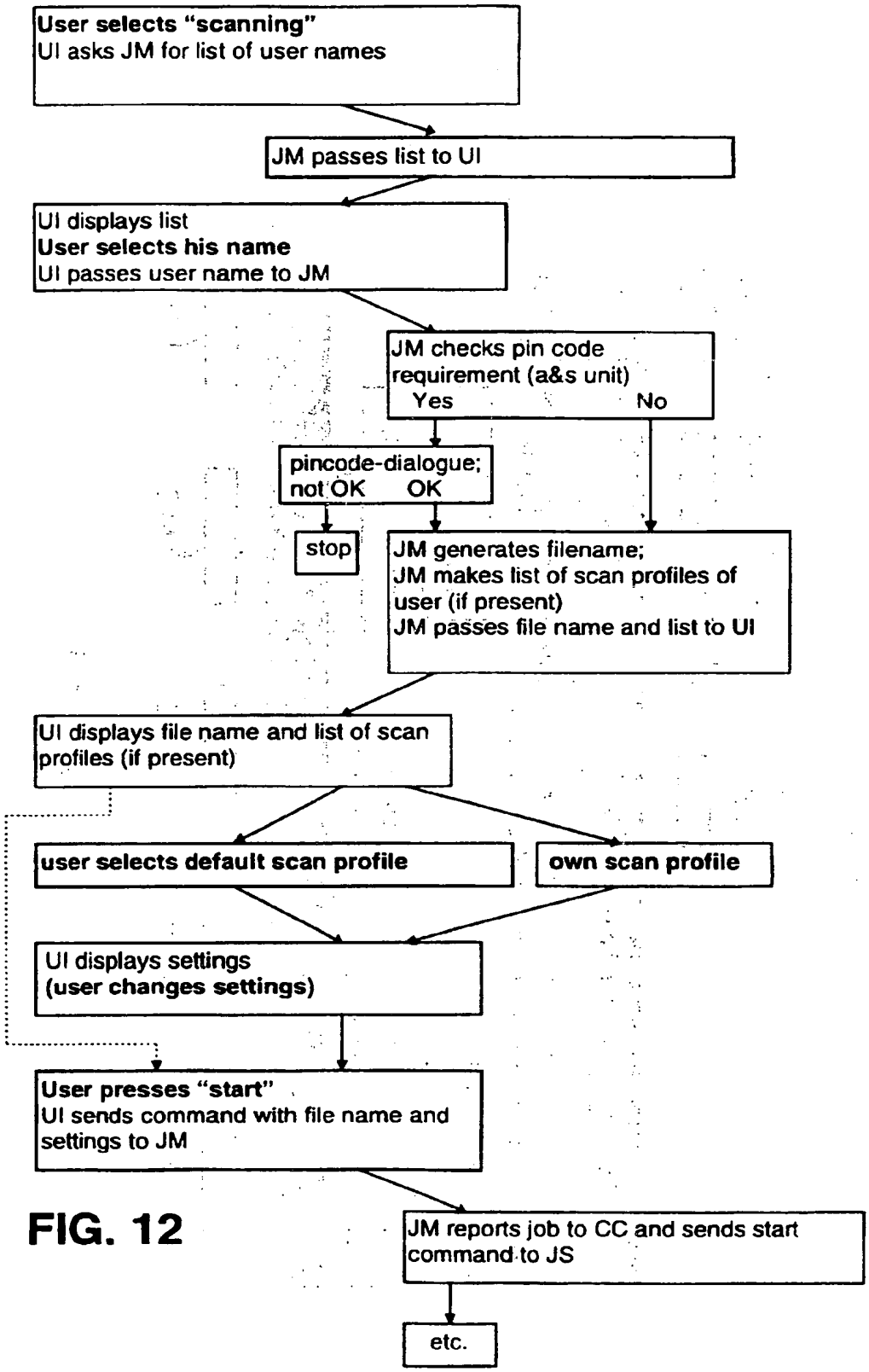

User selects "scanning"
UI asks JM for list of user names
JM passes list to UI
UI displays list
User selects his name
UI passes user name to JM
JM checks pin code requirement (a&s unit)
Yes
No
pincode-dialogue;
not OK
OK
stop
JM generates filename;
JM makes list of scan profiles of user (if present)
JM passes file name and list to UI
UI displays file name and list of scan profiles (if present)
user selects default scan profile
own scan profile
UI displays settings
(user changes settings)
User presses "start"
UI sends command with file name and settings to JM
JM reports job to CC and sends start command to JS
etc.

FIG. 12

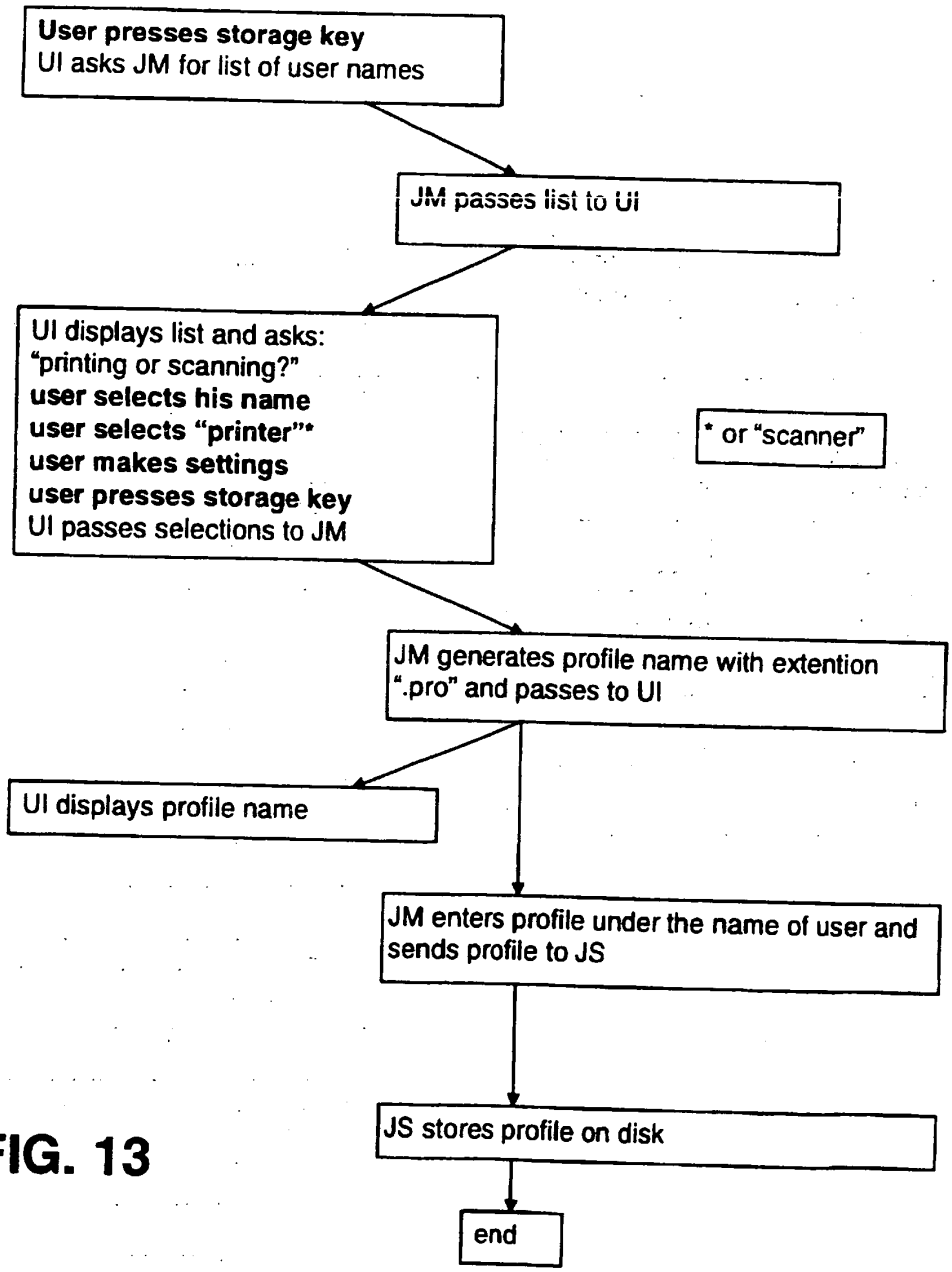

User presses storage key
UI asks JM for list of user names
JM passes list to UI
UI displays list and asks:
"printing or scanning?"
user selects his name
user selects "printer"*
user makes settings
user presses storage key
UI passes selections to JM
* or "scanner"
JM generates profile name with extention ".pro" and passes to UI
UI displays profile name
JM enters profile under the name of user and sends profile to JS
JS stores profile on disk
end

FIG. 13

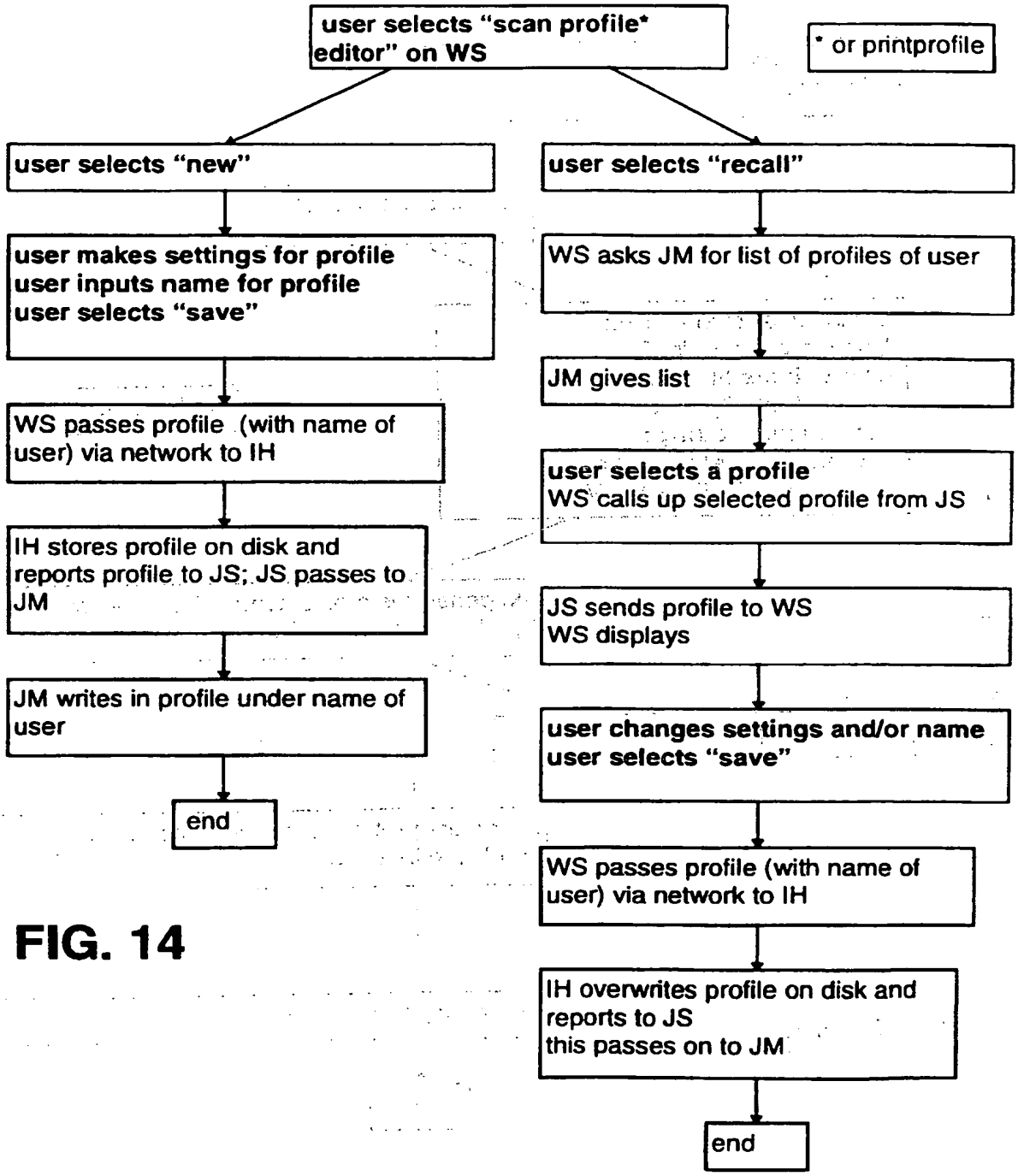

user selects "scan profile* editor" on WS
* or printprofile
user selects "new"
user selects "recall"
user makes settings for profile
user inputs name for profile
user selects "save"
WS asks JM for list of profiles of user
JM gives list
WS passes profile (with name of user) via network to IH
user selects a profile
WS calls up selected profile from JS
IH stores profile on disk and reports profile to JS; JS passes to JM
JS sends profile to WS
WS displays
JM writes in profile under name of user
user changes settings and/or name
user selects "save"
end
WS passes profile (with name of user) via network to IH
IH overwrites profile on disk and reports to JS
this passes on to JM
end

FIG. 14

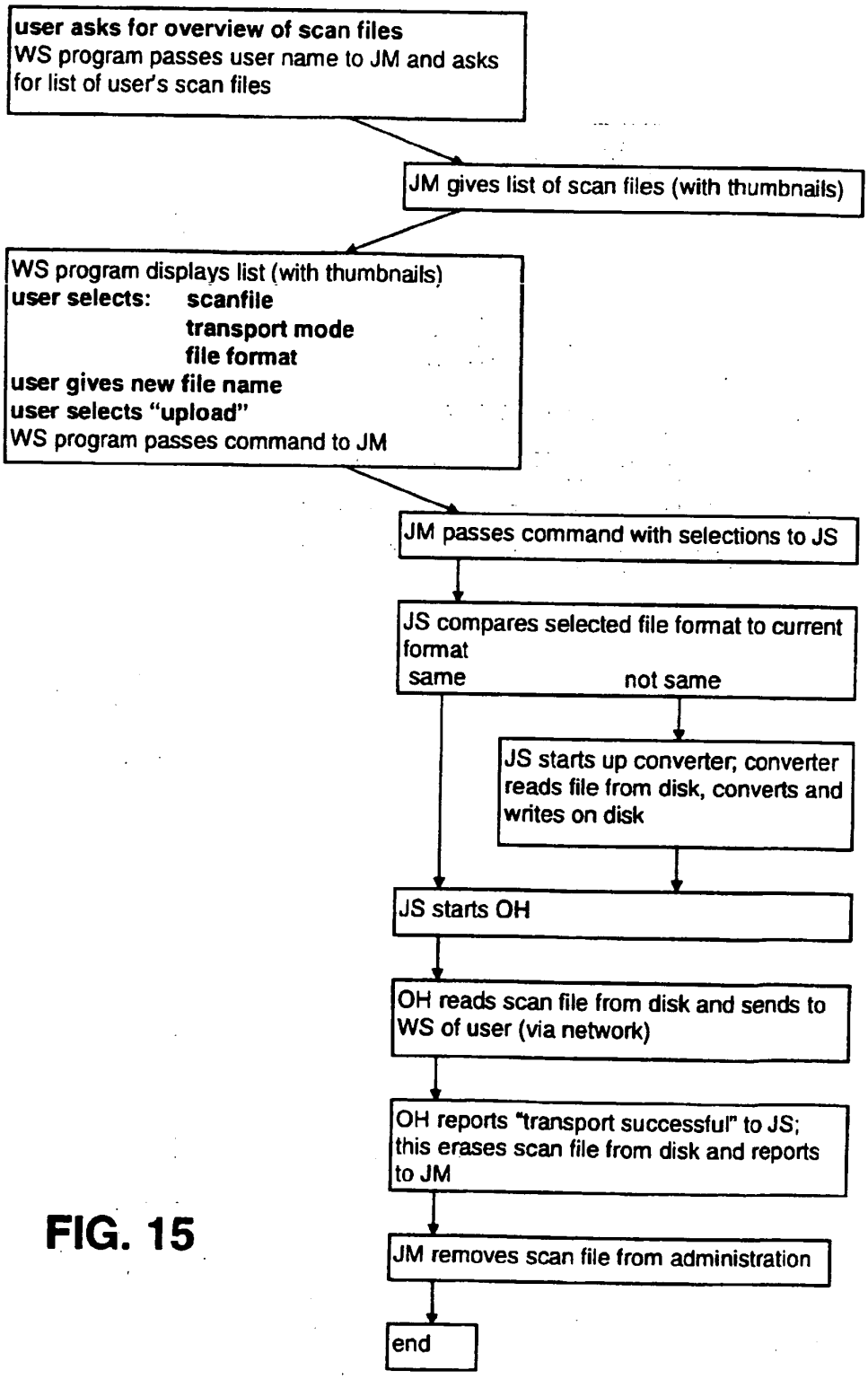

user asks for overview of scan files
WS program passes user name to JM and asks for list of user's scan files
JM gives list of scan files (with thumbnails)
WS program displays list (with thumbnails)
user selects: scanfile
transport mode
file format
user gives new file name
user selects "upload"
WS program passes command to JM
JM passes command with selections to JS
JS compares selected file format to current format
same
not same
JS starts up converter; converter reads file from disk, converts and writes on disk
JS starts OH
OH reads scan file from disk and sends to WS of user (via network)
OH reports "transport successful" to JS; this erases scan file from disk and reports to JM
JM removes scan file from administration
end

FIG. 15

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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 0705

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X A	EP 0 756 414 A (FUJITSU LTD) 29 January 1997 * abstract * * column 1, line 37 - line 44 * * column 5, line 24 - line 35 * * column 6, line 6 - line 47 * * column 8, line 47 - line 56 *	1,4-7,9, 10 3	H04N1/32
D,A	EP 0 689 157 A (OCE NEDERLAND BV) 27 December 1995 * column 1, line 55 - column 2, line 27 * * column 2, line 55 - line 58 * * column 9, line 34 - column 10, line 33 *	1,3-10	
A	US 5 068 888 A (SCHERK RANDALL P ET AL) 26 November 1991 * abstract *	8	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)
H04N G06K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	15 April 1999	Hubeau, R

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